COMMERCIAL CAR JOURNAL

with which is combined Operation & Maintenance

Reg. U. S. Pat. Off.

Acceptance under the Act of June 5, 1934, authorized December 18, 1934. Published monthly.

Member C.C.A.

Vol. LX Philadelphia, December, 1940 No. 4

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SUBSCRIPTION RATES: United States and United States Possessions and all Latin-American countries—$3.00 per year. Canada and Foreign—$4.00 per year. Single copies—40 cents.

Owned and Published by

CHILTON COMPANY

(Incorporated)

Executive Offices

Chestnut and 56th Streets, Philadelphia, Pa., U. S. A.

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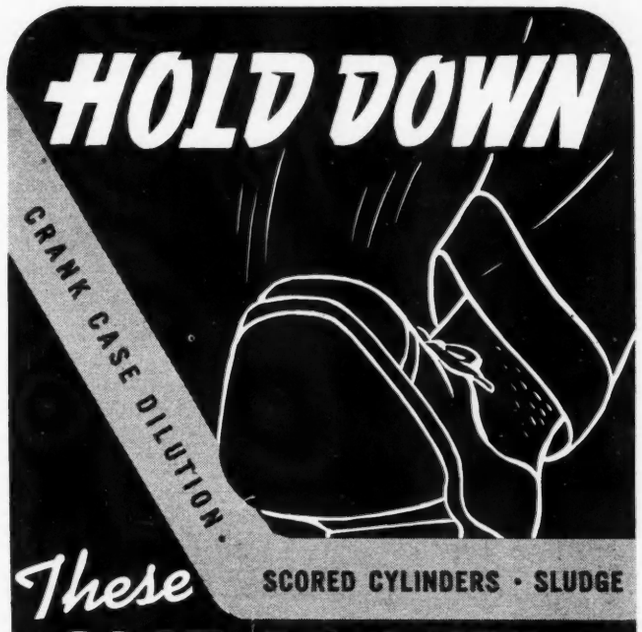

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Such waste and damage are held down on every truck in your fleet, during all seasons of the year, when quick, *even distribution* of heat through the motor is made certain by the installation of Dole By-Pass Thermostat Assemblies.

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TRUCKS

BUCYRUS-ERIE SHOVEL loading one of Cardin's International Trucks. Shovels and trucks lubricated 100% with **TEXACO**, including *Texaco Crater* on open gears and wire rope.

TEXACO DEALERS INVITE YOU TO ENJOY

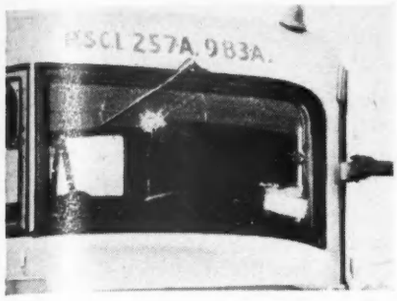
FRED ALLEN in a full-hour program every Wednesday night. CBS, 9:00 E.S.T., 8:00 C.S.T., 10:00 M.S.T., 9:00 P.S.T.

METROPOLITAN OPERA every Saturday afternoon, NBC. See local newspaper for time and station.

TEXACO

REG. T. M.

TEXACO



Driver Joe Wietz of Keeshin Motor Express thinks a lot of the new L.O.F. Safety Glass for although a flying stone went clear through both panes of glass in his windshield, the strong plastic filler kept it from entering cab.

COMMERCIAL CAR JOURNAL

THE MAGAZINE FOR FLEET OPERATORS

THE OVER LOAD

COMMERCIAL CAR JOURNAL has received a chain letter to end all chain letters. You may now consider it addressed to you:

"This chain was started in Reno in the hope of bringing happiness to all tired business men. Unlike most chains, this one does not cost any money. Simply send this letter to five male friends. Then bundle up your wife and send her to the fellow whose name heads the list. When your name works to the top you will, in turn, receive 15,176 gorgeous girls. Have faith and do not break the chain. One man broke the chain and got his wife back."

Instead of addressing it to five friends, we are addressing it to 30,000 readers, which, with simple arithmetical progression, should bring us a return of 9,056,000 females of the species—hey, boy!

Among Other Things

Now, having taken care of our editorial love life we can get down to business with a definition of a consultant contributed by a fleet manager: "A consultant is a man who knows less about your business than you do, but who gets more for telling you how to run it than you could possibly make out of the business yourself even if you ran it right instead of the way he tells you to."

Signs of the Times

Our very best political pipe lines have not been able to disclose that there is any argument about the date of Christmas despite the double feature Thanksgiving program. So for Dec. 25, we say "Merry Christmas."

Shoulder Arms

Robert P. Patterson, Assistant Secretary of War, was the chief speaker at the annual dinner of the SAE. He extolled the virtues of the internal combustion engine and quoted some interesting figures. According to Mr. Patterson, the army motorization program will require 186,000 motor vehicles. Of these, 16,000 have been purchased from 1940 funds and 39,000 will be delivered by January 15. Then with a burst of enthusiasm for the armed pedestrian of the army, Mr. Patterson grew so eloquent that he left us with the impression that he thought this motorization program was nice, clean by-play, but that his real love was for the infantry.

Count Off

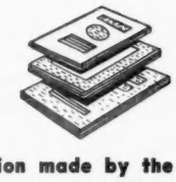
Corroborating the information given in these columns in a previous issue relative to a government census of motor trucks for emergency transportation, C. D. Curtiss, Chief, Division of Control, Public Roads Administration, speaking before the Eastern Conference of the American Association of Motor Vehicle Administrators, said, "Plans are being formulated for taking this motor vehicle inventory or census through the state registration offices, and you may expect very soon to be enlisted for the purpose."

So Sorry

One of our editorial representatives journeyed to Atlantic City to see the Dairy Industries Exposition, to attend the convention sessions of milk and ice cream associations, and report on those which he judged to be of interest to our readers. He returned with a program which listed the names of the people on the Reception

(TURN TO PAGE 113, PLEASE)

FREE BOOKS



. . . a special selection made by the editors . . . to get your copy, just check the letter on the post card between pages 108 and 109 which corresponds with the item you desire and mail to Commercial Car Journal, Philadelphia.

Fruehauf Profit Prover

Number one offer this month is not literature at all. It is a mighty handy circular slide rule device by which fleetmen can calculate additional profits made possible by savings in trailer weight. Fruehauf Trailer Co. is sponsor. Check "A" on post card.

"In Case of Fire"

"In Case of Fire" you will be glad you had seen the booklet by that title offered by C-O-Two Fire Equipment Co., Newark, N. J. It shows the company's complete line of hand and wheel-type CO_2 extinguishers together with some potent arguments for this type of equipment. Check "B" on the post card.

Sunnen Grinder Catalog

Sunnen Products Co., St. Louis, has a new crankshaft grinder that can be used either as a portable unit or in conjunction with a lathe. A new 8-page bulletin gives full details. Check "C" on the post card.

Wausau Snow Plows

Specialized to the snow-fighting field, but all-inclusive in its scope, is a new 36-page catalog of Wausau snow plows (Wausau Iron Works, Wausau, Wis.). Full details of the company line, including power-handling equipment, are included. Check "D" on the post card.

Shaler Engine Booklet

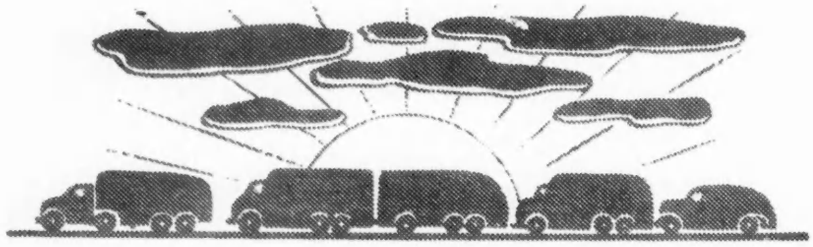
Lubrication, maintenance and tune-up problems of gasoline and diesel engines are discussed in a new 65-page booklet compiled by engineers of the Shaler Mfg. Co., Waupun, Wis. Special emphasis is placed on the use of proper engine lubricants. Check "E" on the post card.

Wayne Compressor Catalog

Several new models of Wayne air compressors are described and illustrated along with other units of the company's line in a new compressor catalog by Wayne Pump Co., Fort Wayne, Ind. Twelve pages. Check "F" on the post card.

AFTER HOURS

EDITORIAL COMMENT BY GEORGE T. HOOK, EDITOR



1. United We Stand—to Gain . . . 2. The I.C.C. Says "No"!

INTERNAL causes and external influences combined to make "unity" the keynote of the seventh annual convention of the American Trucking Associations, Inc., at Los Angeles last month. At every opportunity speakers appealed to members of the trucking industry to avoid factional disputes and to present a united front in furthering the interests of highway transportation at this crucial period of the nation's history.

The internal causes which have indicated the lack of unity have been growing in seriousness ever since the organization of the A.T.A. eight years ago and subsequent passage of the Federal Motor Carrier Act. Regular-route common carriers, irregular-route common carriers, contract carriers and private truck owners have found occasion time and again to suspect one another's motives and actions, and to show open resentment.

The external influences are, of course, those arising from the emergency program of national defense. The emergency seems to be the proper time for the trucking industry to shake off political fetters and to have done the things that need to be done in order to give the nation a truly efficient system of highway transportation at the lowest possible cost.

If the industry is to solve its problems and make desirable advancements the various classes of operators must present a united front. And they can present such a front because, fortunately, the battle that needs to be waged is for benefits that all carriers can share. We doubt that any speaker who appealed for unity—and that would include President Ted V. Rodgers—would expect any class of carrier to set aside the advancement of interests which are selfish in character but which that class feels involve principles vital to its well-being. While there is such a thing as competition selfish interests are bound to predominate. To ask that they be put in mothballs even temporarily is to ask more than human nature is inclined to deliver.

It is difficult to foresee the day when common, contract and private carriers will be content with their lot and live in utter peace and harmony. The apple of discord is "Regulation," and disputes are inevitable.

But just as political factions will continue to oppose one another in the conduct of domestic affairs while presenting a united front on foreign policy, so factions within the truck industry can and must unite to achieve desirable ends of benefit to all while reserving the right to oppose one another on factional issues.

United We Stand—to Gain.

The I.C.C. Says "No"!

THE biggest news event of the month, from a truck industry point of view, was the refusal of the Interstate Commerce Commission to permit the merger of more than a score of trucking companies located along the Atlantic Seaboard.

In denying the application of The Transport Co., which had the financial backing of Kuhn, Loeb & Co., to effect the 25-million-dollar merger, the Commission simply announced that the denial was unanimous and promised that its reasons would be forthcoming later. This departure from custom was occasioned by the request of the applicants that the decision be made known by Nov. 15, the date when options held by The Transport Co. were to become effective.

CCJ QUIZ

By ROBERT F. BAHL

Who says: "A Merry Quizmas to All"

'Twas the night before Christmas and all through the house . . . everyone was racking his brains over the CCJ Quiz. Everybody wants to show a grand score when Santa comes around. Each correct answer means 10 points, and if you score a hundred, Santa will give you anything you want except his whiskers.

1.

Traveling on a "super-Super Highway" between the North Pole and New York City (nary a bend and nary a hill), how much mileage would Santa Claus add to his new delivery truck on his annual trip to the kiddies on the East Side?
a. 2100 miles. b. 3100 miles. c. 4100 miles.

2.

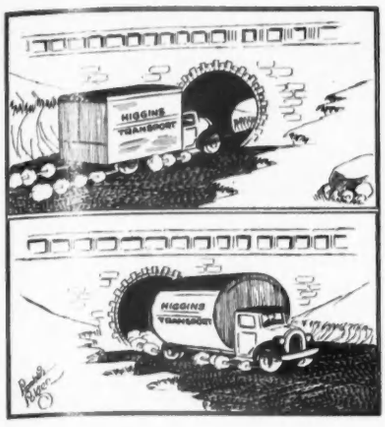
Just as a precaution against being delayed by a snow-drift or two on Christmas Eve, Old Saint Nick is thinking about placing an order for a new snow plow with
a. Klauer Mfg. Co.
b. The Burch Corporation.
c. Gatke Corporation.

3.

Turning back the pages to war-torn 1917, we recall Henry Ford's famous motto:
a. "A Christmas treat for every Doughboy."
b. "Out of the trenches by Christmas."
c. "No cannons on Christmas Day."

4.

When Santa replaced his eight reindeer with a new streamlined delivery truck, he wanted to retain his former hauling capacity, so he bought a



Therefore, not until the reasons for the Commission's failure to sanction the merger are revealed will it be known if the decision is one that establishes a precedent, and is therefore to be classed as being of major historical importance.

If the Commission reached its decision because it felt that trucking company mergers of the size of the one in question are not in the public interest because they incline toward the establishment of regional monopolies, a vital precedent will have been established, and history made. The effect would be to discourage similar large-scale mergers which have been in process of development in various sections of the country, and which would have burst into full bloom the moment The Transport Co. merger was approved.

It may be that the adverse decision was based solely on the conviction that the amounts of money to be paid the various participating carriers under the terms of organization, and to the organizers for their services were excessive. If so, the promoters of mergers will see in the decision tacit approval of the principle of mergers and proceed with their plans along conservative lines. They will reason that the Commission would hardly have overlooked the opportunity to render a precedent-setting decision on mergers in principle if it truly believed they were not in the public interest.

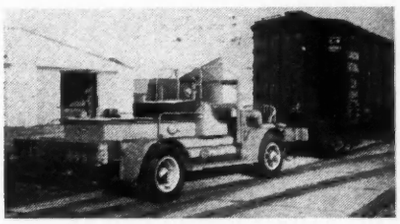
However, there is the possibility that the decision was based on expediency involving the national defense program. If the Commission reasoned that the merger should not be approved because effecting of the economies of unified operation claimed in the application held the seeds of dislocations of personnel and equipment and might lead to labor strife and thus interfere seriously with the highway transportation requirements of a highly industrialized area vital to the nation's defense program, then no precedent will have been established. The making of history will have been postponed. But there will be no large-scale mergers of trucking concerns for the duration of the emergency.

At a time like the present the "public interest," which the Interstate Commerce Commission must protect and promote, has a wider scope than in normal times and a deeper significance. Whereas in normal times experiments with public interest may be undertaken with little danger, in times of emergency it is wiser to shun them.

The truck industry should look forward to the reasoning of the Commission with a great deal of interest.

To service air-conditioning and other special equipment in its chain of Ohio inns, Stone Grill Co., Columbus, maintains this rolling machine shop replete with lathe, tools and parts. The all-steel Lindsay Structure body was built by Hercules Body Sales Co.

To make sure Perfection Bakeries drivers understood the simplified controls of their 214 new White Horses, White Motor Co. furnished the basement of its Los Angeles branch for a "driver academy". Within 30 hours, 250 men had passed the course



This one is for the "man bites dog series", for here is a Mack EH doing the locomotive's job. It happens every day at Pacific Coast Terminals, New Westminister, B. C. Special bumpers and spring-mounted hooks are used

---

a. ½-ton to 1-ton model.
b. 1-ton to 1½-ton model.
c. 1½-ton to 2-ton model.

5.

"It's the biggest Christmas Tree I've ever delivered," said Santa, and then he went out and coupled up trailers with a length totaling fully

a. 40 feet. b. 80 feet. c. 160 feet.

6.

According to the earliest legends and traditions, St. Nicholas's mode of transportation was not a sleigh and reindeer, but was

a. An old grey mare.
b. An enchanted broom.
c. A magic carpet.

7.

Santa doesn't take any chances of his truck freezing up in his ice-garage at the North Pole, so he uses a special anti-freeze that protects it to a temperature of

a. 42 degrees below zero.
b. 82 degrees below zero.
c. 162 degrees below zero.

8.

This is a special question for truck drivers who feel they are overburdened with deliveries. Just how many packages do you think Santa Claus has to deliver if he brings just one toy to every American boy and girl under 10 years . . . and all in one night?

a. Approximately 10,000,000 deliveries.
b. Approximately 17,500,000 deliveries.
c. Approximately 25,000,000 deliveries.

9.

If you had a shipment consigned to the town of Santa Claus, to what state would you send it?

a. Pennsylvania. b. North Dakota.
c. Indiana.

10.

Santa is taking precautions against skids this winter, so he's just placed an order with the Lintern Corporation of Cleveland. His order calls for

a. Multi-Grip Chains.
b. Sanders.
c. New deep-groove tires.

(Correct Answers on Page 106)

MEMO ON MANNERS OF DRIVERS

Poll of opinion made by ATA shows public finds more to like than to dislike about truck drivers in general and over-the-road drivers in particular but indicates need for improvement

by DICK RIEBER

When you reach the next corner,
Don't trust to luck,
The next thing you meet
Might be a truck.

MOTORISTS coming into Washington from Virginia recently were treated to the above ditty in an effort to arouse their interest in a shaving soap. Everyone who travels the highways, even infrequently, knows the Burma Shave jingles.

The anti-truck rhyme is a fairly accurate reflection of the public attitude toward trucks and truck drivers about five years ago. But now it is out of date.

The matter was promptly brought to the attention of the Burma Shave people by trucking interests, and the mean little rhyme probably long since has been painted over and replaced by some innocuous quatrain.

It was suggested that Burma Shave substitute this one:

When you're out on the road,
And your car gets stuck,
Keep your eye peeled
For a friendly truck.

Quite naturally, the readers of this magazine will cast their votes for the substitute verse. But does it accurately represent public opinion? Or is it an attempt merely to marshall new friends for an industry which hasn't enough?

A few months ago the answer wasn't available. Some people thought truck drivers were nice fellows; others thought they were heels. But which group was in the majority?

Now we know.

The hard-and-fast friends of the truck driver predominate.

And the die-hard haters — those who find nothing to like about truck drivers—account for about 15 per cent.

This cross-section of the public attitude toward truck drivers is a product of a nation-wide survey taken by the American Trucking Associations, Inc. The survey was the first step in ATA's expanded public relations program.

Interviewers questioned thousands of people in about 50 different cities, ranging in size from New York to White River Junction, Vt. People were asked not only what they like about truck drivers, but what they dislike as well.

Analysis of the answers to the questions affords every truck operator in the country, whether he be a farmer with one truck, a common carrier with hundreds, or a public utility with thousands, an invaluable guide for making his own drivers more effective salesmen for his own company and trucking generally.

Many times it has been pointed out to truck operators that their drivers and their vehicles are the best means they have for winning friends or losing them. Another point that has been made often is that a truck is a truck to the public. When public opinion voices itself on some issue involving the industry, there is rarely any distinction made between the classes of vehicles. The boy driving the grocery truck goes down a peg in the estimation of the man who has been cut out on the highway by the driver of a tractor-semi-trailer job. And the tractor-semi-trailer driver gains an enemy in the motorist who has been offended by the grocery truck.

The point is that truck drivers in any one branch of the industry cannot gain lasting friends if drivers in other branches do not put forth similar efforts.

Getting back to the survey, 53 per cent of the people said there was nothing to dislike about truck drivers, while 47 per cent said they disliked something.

On the other hand, 15 per cent found nothing to admire, and 85 per cent found at least one good quality in truck drivers.

Here are the reasons people like the men whom Secretary Ickes has criticized as "the lord of the highway." The percentage of people specifying the reasons also are given:

Courtesy and politeness, 36 per cent.

Good drivers, 20 per cent.

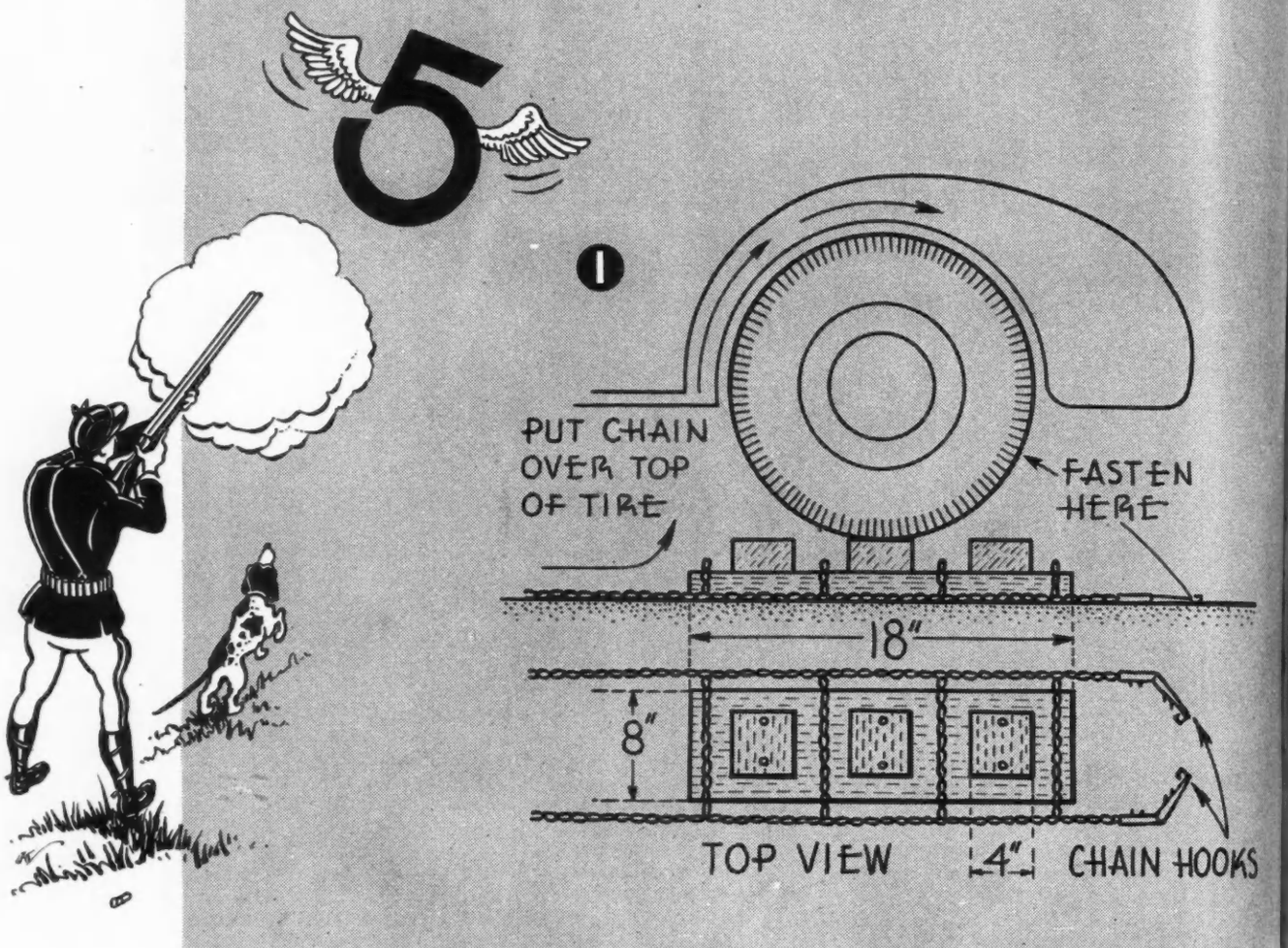
Men "okay," pleasant, jolly, etc., 18 per cent.

Accommodating, willing to help others in accidents, 8 per cent.

(Turn to Page 66, Please)

CAN YOU USE $5?

That's what Commercial Car Journal pays for each shop hint accepted for publication on these pages. Simply send in the idea which you believe to be original. Don't worry about style. Acceptance is based on the idea. CCJ will edit it for publication



1. Chain Ramp

By William Acker
San Francisco, Cal.

Putting on tire chains is a disagreeable job at best and I think it can be made a little easier by driving the wheels on to a ramp made for the purpose. The actual size of the ramp may vary somewhat depending upon the tire size but the cleats should be screwed to an 8 in. hardwood plank. The cleats may be 4 in. wide but should be widely spaced to allow room to snug up the chains.

2. Armature Cleaner

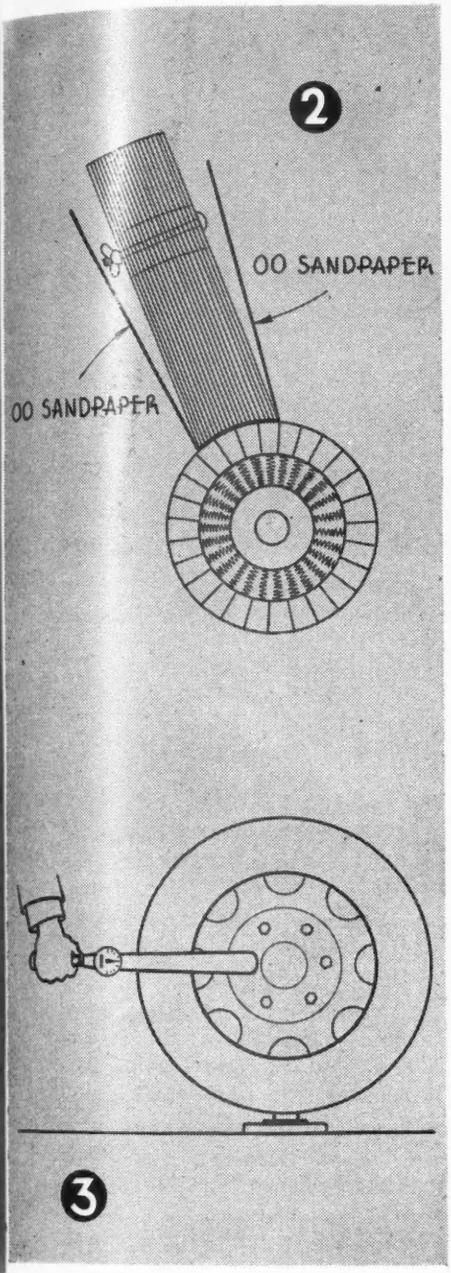
By William Acker
San Francisco, Cal.

You can obtain better results in sanding commutators of generators and starters by using a jig that permits the sandpaper to conform to the arc of the commutator. A number of thin strips of fiber slotted and loosely held together with a machine screw and wing nut will make the jig. Simply apply with the sandpaper in place and the fibre strips will conform to the proper curve. It can be done with steel strips but it is dangerous unless you are sure that the sandpaper is held in place all of the time.

3. Brake Gage

By Don C. Laurian
Michigan Bakeries, Inc.,
Kalamazoo, Mich.

I believe I have found a new use for a tension wrench. After jacking up all four wheels when doing a brake job I depress the brake pedal with a conventional pedal jack. Then I use the tension wrench for brake equalizing. The method is simply to select the right size socket for a wheel



SHOP HINTS

FROM FLEET SHOPS

mounting bolt and with this turn the wheel noting the reading on the scale. This is by far the cheapest brake tester yet devised. The only trick is to make sure that the wrench is always at the same angle so that the handle or point of effort is the same distance from the center of the hub.

4. Chain Tool

By J. M. Sharer
Elite Laundry, Washington, D. C.

In order to make chain repairs a little easier we have rigged up a power tool which is a combination of a pair of hand chain pliers and a foot tool and air cylinder. It is now so arranged that it operates with the ease of a sewing machine. The power is supplied by the air from our regular shop compressor. The tool as you see it in the photograph is used to spread links and with an anvil the same operation will close links.

Door Lock

By O. H. Bratz
Motor Transport Co., Milwaukee, Wis.

We did a great deal of experimenting with padlocks for the rear doors of our trailers. We tried tumbler locks and straight padlocks made of steel, iron, laminated brass and copper, some with square bottoms and some with round bottoms.

We finally found that by drilling a 1/32 in. hole in the bottom of a round lock the water and dust was expelled better. We graphite the interior of the locks liberally and we select locks that have big keys and key holes. The smaller holes choke up much quicker. Another requirement that we have found worth while is a spring key hole cover.

Panel experts of "Safety Information Please" are (l. to r.): D. M. McCracken, Liberty Mutual; H. S. Cole, Washington Star; C. G. Morgan, Jr., ATA; F. W. Rice, Cushman; J. W. Jacobson, Boutell, and Asa Caldwell.

(SAFETY) INFORMATION, PLEASE!

These and other controversial safety questions fail to stump the experts at National Safety Congress: How can trucks keep rolling safely during a war emergency... what is management's interest and responsibility with regard to accidents... what about driver education... bonuses... awards... penalties... first aid training... road trailing... heaters... retreaded tires... conscription?

by RANDALL R. HOWARD

HOW to keep motor vehicles operating safely and efficiently during these war emergency times? This was the practical theme of the recent three-day annual meeting of the Commercial Vehicle Section of the National Safety Council, held at the Stevens Hotel in Chicago from October 8 to 10 inclusive. The total attendance at the lively sessions was the largest on record during recent years, nearly all states of the United States were represented, and there was a noticeable percentage increase in the registration of important fleet officials.

The "war emergency" theme of the sessions wasn't all theory. There was serious discussion of the problem of getting and keeping good mechanics and drivers, in competition with the expected man-power demands of our national army Selective Service program. In another discussion there came out evidence of the mysterious failure of hydraulic brakes—and all of the reported cases related to only one make of vehicle, quite suggestive of possible factory sabotage. As a climax to the sessions, about 50 delegates remained for an extra day to witness an arranged routine safety inspection of interstate motor trucks, conducted by two I.C.C. safety in-

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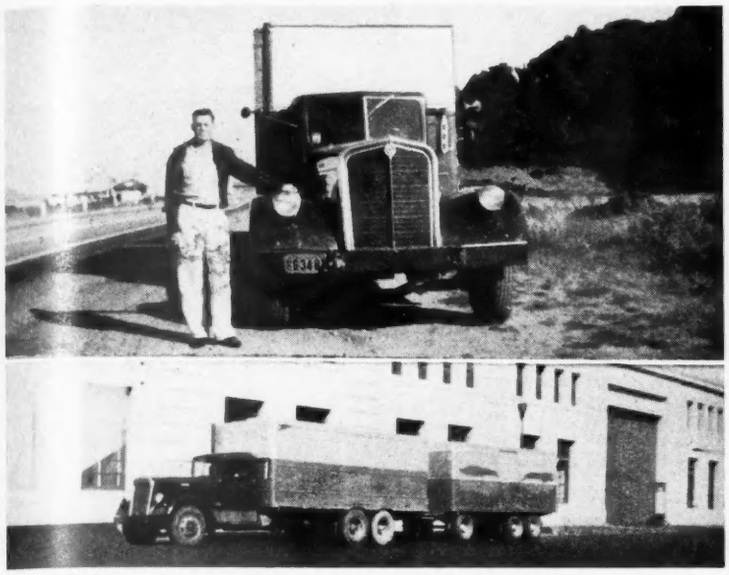

Alfred Wilcox, author of the article, poses beside a favorite rig. An idea of the latter's 68,000-lb. size can be gained from lower photo

EDITOR'S NOTE

Alfred Wilcox can't remember a time when he hasn't heard truck talk or been around trucks. When he was young his father sold them. He learned to drive them with the Marine Corps in Nicaragua. Since 1933 he has been driving the big ones for Purity Stores, Ltd., which operates 112 chain grocery stores throughout California.

"We are proud of Purity's safety record," says Wilcox. "Accidents have been reduced from 1 per 3000 miles in 1935 to 1 per 100,000 miles today. We have a safety committee, a system of awards, proper equipment and good working conditions. There is real cooperation between house and drivers."

But he thinks truck designers should cooperate with drivers along certain lines which he points out in this letter to the Editor.

A SPINNER SPEAKS

A West Coast truck driver, talking from experience, offers some constructive criticism of such design details as gages, windshields, brake pedals, horns, steering wheels and the position of transmission levers

by ALFRED H. WILCOX

Truck Driver, Purity Stores, Ltd., San Francisco

TO THE EDITOR:

IN your magazine I have read a lot of articles by capable engineers, shop foremen, mechanics, safety engineers and such, but not many from the man behind the wheel who pushes the truck down the road.

While the drivers have looked with joy upon the new improvements in engines, transmissions, brakes, bodies, etc., there are still a few things to be desired in the perfect truck from the driver's viewpoint.

Most of my experience has been on the West Coast where a truck to be commercially practical must be able to pull 68,000 lb. down the road at 45 m.p.h.; walk over a 6 per cent grade at 10 m.p.h.; stop after holding that load down 10 or 15 miles of grade, so that I can see the engineers have gone a long, long way.

But let's get in one, drive it, and see how it feels and what goes on. First, the highway truck of today is higher (13 ft. allowed in California) and wider and longer (60 ft. maximum California).

All right, climb in the cab. It's a new such-and-such model with a big 150-225-hp. Diesel with all the necessary attachments and equipment. Sit in the seat, wiggle a little, grab the 3-ft. wheel, and look around. There are big gages and there are little gages; on one model they are all in a bunch, on another they are scattered all over the board; in some cases they are light-faced, in others dark. Going down the road there are three important gages the driver wants to see: (1) Lubricating Oil; (2) Air Pressure; (3) Water Temperature. They keep telling us of the importance of watching these. Next is the tachometer. Cannot these four gages be put directly under the windshield where the driver is looking and be black-faced with big arms that are white or radium-covered so

(TURN TO PAGE 102, PLEASE)

AN unusual effort to impress upon drivers the costliness of abuses to which trucks are subjected and to win the cooperation of drivers in being more careful with the equipment entrusted to them has been undertaken by the automotive transportation department of the Tidewater Associated Oil Co.

The effort consists of a well-thought-out educational program that is practical in character. In the program the failures to various truck parts are brought right to the drivers in pictorial form; the abuses that led to those failures are constructively presented; the costs in dollars and cents are given, and the cures are outlined.

The nub of the program is the picturization of failures and the impressive itemization of their cost. Experience so far with the program indicates that drivers understand the language of money very well.

According to T. L. Preble, supervisor of automotive transportation, the two major objectives of the program are (1) lowering the maintenance cost, and (2) safety.

"It is axiomatic that maintenance costs vary with the skill or lack of skill of the driver," says Mr. Preble. "It is also self-evident that to accurately evaluate the effect of driver handling on maintenance is impossible. However, we were casting around for new ways of saving money and we decided to try to inject some life into the inanimate axiom just mentioned. Consequently, from our maintenance records we chose a group of items which, in many cases, not only bear upon safety but which also are the recipients of altogether too much abuse from drivers. From our own various 'boneyards' we assembled the chamber of horrors. Each part in the mechanical rogue's gallery was photographed. Each photograph was then blown up on a linen sheet measuring approximately 48 in. in width and 18 in. in depth. On the linen sheets was added enough lettering to identify the failure, to state the cause and to indicate the cost in dollars and cents. In this form it was intended to be visible to the man in the last row. The approximate cost of the photographing and blowing up was $7.00 per linen sheet.

"The linen sheets are bolted together between two strips of wood and are set up on a tripod before assembled drivers.

"Our next step was to prepare a script to go with the illustrations. (Ed. Note—The script is given in full in this article.) This script is mimeographed. The supervisor addressing the meeting of drivers reads the script and, as he proceeds, refers to the appropriate linen sheet.

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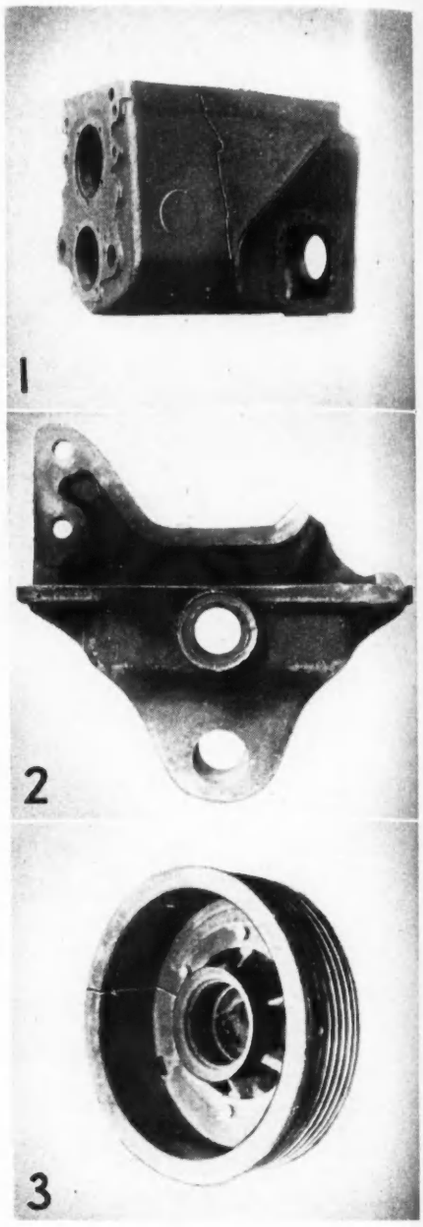
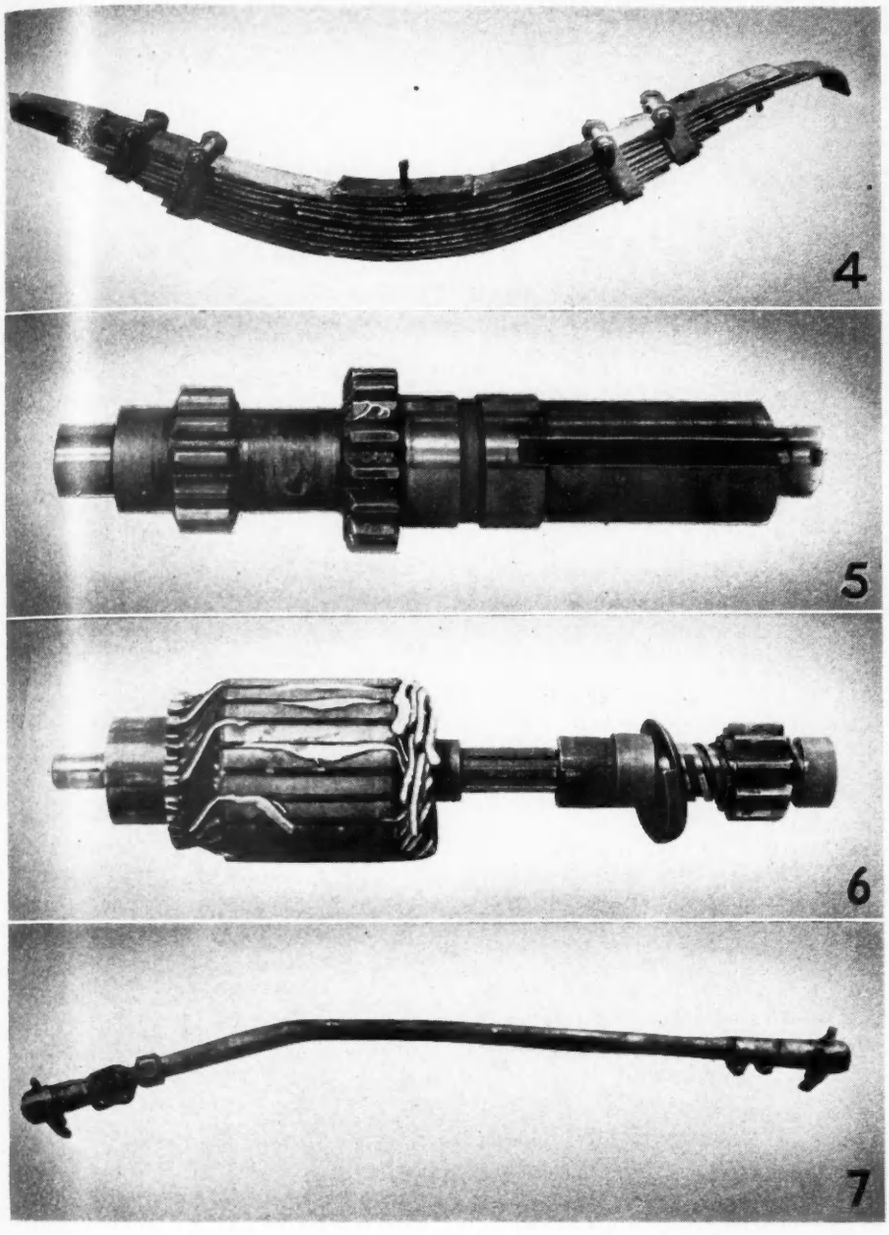
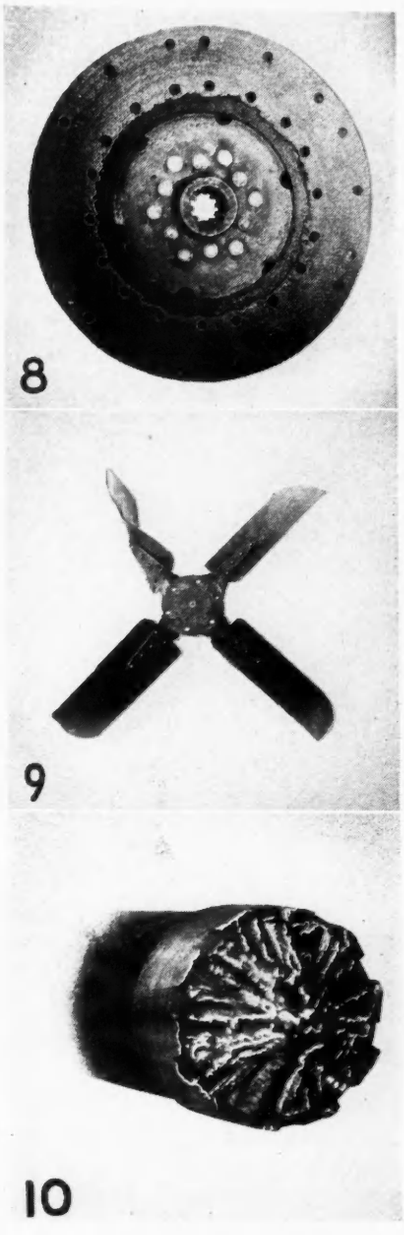


As used by the Tidewater Associated Oil Company the examples of abuse here illustrated are blown up and reproduced on linen sheets measuring approximately 48 x 18 in. On each linen sheet the information given in the following captions is lettered in. In the course of his talk on the various abuses the supervisor making the presentation reads off the information lettered on the sheets and comments.

OBJECT LESSONS

Tidewater Uses Rogue's Gallery of Damaged Parts



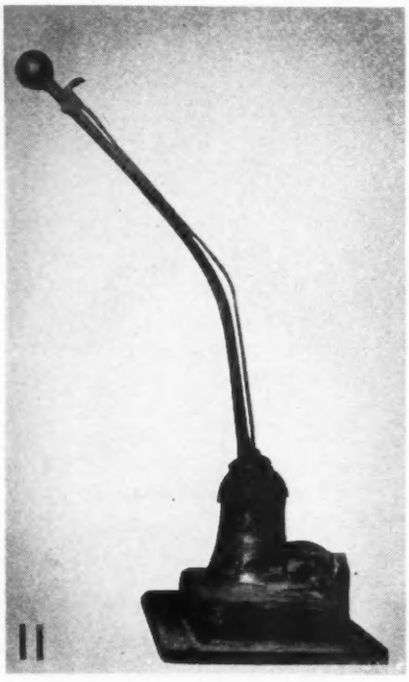


1. Cracked transmission case: Cause—Rocking and jerking to get out of mud. Cost—Labor and material, $276.
2. Broken spring hanger: Cause—Rocking truck or sudden clutch engagement. Cost—Lab. and mat., $28.
3. Cracked brake drum. Cause—Speed stops and poor driving judgment. Cost—Labor and material, $94.
4. Broken rear spring: Cause—Speed on bumpy roads, obstructions, or sudden stops. Cost—Lab. and mat., $46.
5. Damaged main shaft gears: Cause—Careless handling resulting in gear clashing. Cost—Lab. and mat., $96.
6. Damaged Bendix drive and starter armature: Cause—Depressing starter pedal with engine running. Cost—Labor and material $65.
7. Bent steering cross rod: Cause—Hitting curbs with the front wheels. Cost—Impossible to estimate because of the resulting abnormal tire wear.
8. Burnt clutch facing: Cause—Riding clutch pedal, causing the clutch to slip. Cost—Labor and material, $125.
9. Bent engine fan: Cause—Hood dropped with engine running; fan gouged radiator core before engine stopped. Cost—Lab. and mat., $90.
10. Broken axle shaft: Cause—Rocking truck or sudden clutch engagement. Cost—Labor and materials, $42.

IN TRUCK ABUSE

to Promote Safety and Impress upon Drivers the High Cost of Carelessness

OBJECT LESSONS IN TRUCK ABUSE



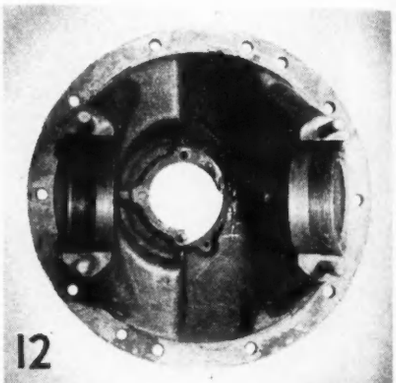
11. Bent transmission gear shift lever: Cause—Bad temper. Cost—Including damage to transmission, $165.

12. Broken differential carrier housing: Cause—Hard clutching or strain when stuck. Cost—Lab. and mat., $138.

13. Broken differential countershaft: Cause — Excessive braking, rocking, or clutching. Cost—Lab. and mat., $74.

14. Broken differential pinions: Cause —Excessive braking, rocking or hard clutch usage. Cost—Varying but high.

15. Broken differential gear cluster: Cause—Excessive braking, rocking or clutching. Cost—Lab. and mat., $385.



(CONTINUED FROM PAGE 26)

"At the conclusion of the supervisor's presentation, mimeographed copies of the talk are passed out to all the drivers present. Along with the copy of the talk each driver is given a questionnaire based upon the talk and asked to fill out the questionnaire and turn it in at the plant office within two weeks. (Ed. Note—One questionnaire is published at the end of this article.) Drivers are told that they are at liberty to consult the mimeographed outline of the talk, or to refer to any other source of information, in filling out the questionnaire. The sole purpose of this method is to fix permanently in the minds of drivers a better understanding of the costly and unsafe effects of improper handling of vehicles.

"Psychologically we are basing this procedure on the premise that unless procedures of this type can really be made to sink in they are relatively worthless, and that this treatment gets the subject matter over the counter better than speech-making alone. The usual type of speech in a drivers' meeting is one of exhortation or scolding or the usual pep talk. Here is something tangible, based on the fair assumption that most men are more retentive of that which they see than that which they hear. The visual memory seems to be better than the auditory memory. The reaction of drivers has been good. It indicates that a third objective, of a less tangible nature than the two mentioned, is being attained—namely, an overall improvement in driver attitude.

"A one-shot attack with a program like this is like trying to kill a cat with one bullet: meaning that he has eight more lives. Consequently, we are planning additional sets of abuses and additional questionnaires. We want to make this thing a continual process. As a matter of fact we are

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PISTON RING FRICTION & DRAG

The results of tests show that expander type rings with higher unit wall pressures do not cause more drag than snap type

by CHARLES MARIEN
Chief Engineer, Ramsey Accessories Mfg. Co.

BEFORE discussing the question of friction and drag as related to expander type piston rings it is well to examine the fundamental reasons for the use of such rings. Expander type rings were originated over 20 years ago, since then their use has ever been increasing. Although this type has been accepted for quite a few years now, it still has not reached its peak of popularity in all fields. In the replacement field, however, it is practically standard procedure to use expander type piston rings. We believe that the expander type ring is fundamentally correct and that it will just be a matter of time until it will completely supersede the sole use of plain snap rings in engines.

The piston ring expander was first introduced to retard piston slap and cushion the piston so that a motor would run more quietly. The retardation of piston slap and piston vibration results in a longer, more effective life for the piston rings due to the fact that barrel facing of the piston rings is retarded. Another important function of the piston ring expander is to eliminate ring flutter or vibration of the gap ends. The gap ends of plain snap rings are known to flutter at certain critical speeds allowing excessive blow-by and oil consumption. The dampening effect of a ring expander will prevent ring flutter.

At the time that the piston ring expander was introduced the problem of oil consumption and compression control was not severe and a large increase in efficiency on these two items was, of course, not realized. As higher speed, higher compression engines were developed and force feed lubrication was more widely adopted the problems of compression control, blow-by and oil consumption were accentuated. Since the expander type ring was available it was, of course, noted through experience that this type of ring was very effective in sealing the cylinders of modern engines against gas leakage and excessive oil consumption.

The efficiency of the expander type piston ring in these respects comes about not only due to the fact that they cushion the piston and reduce piston rocking, but also that they are

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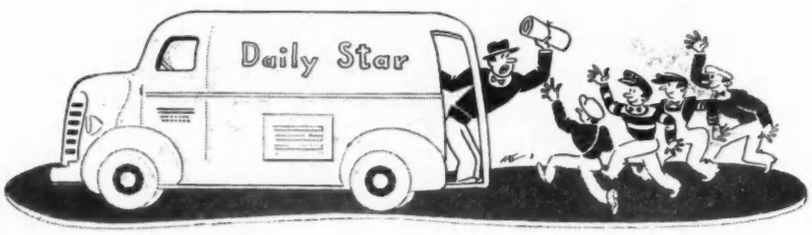
THE BODY OF THE MONTH

FOR NEWSPAPER DELIVERY



Above: Full view of the Toronto Star's new COE delivery unit shows how the unique semi-protected rear platform is made an integral part of the body. Photos on opposite page illustrate the double functions of the rear panel which also serves as a loading platform. Note also the neon sign in front

EDITOR'S NOTE

Through the good offices of J. S. Atkinson, vice-president of *The Toronto Star*, Toronto, Canada, the COMMERCIAL CAR JOURNAL is able to present the details of a unique newspaper delivery body designed and built entirely within the Star's fleet shop by T. S. Wescott, garage superintendent, and his regular shop force. While the design of the body departs from the conventional in many places every point of departure has been carefully considered from the standpoint of utility.

Fleetmen who have designed unusual bodies are urged to send in details along the lines of the material given here. COMMERCIAL CAR JOURNAL will gladly publish them.

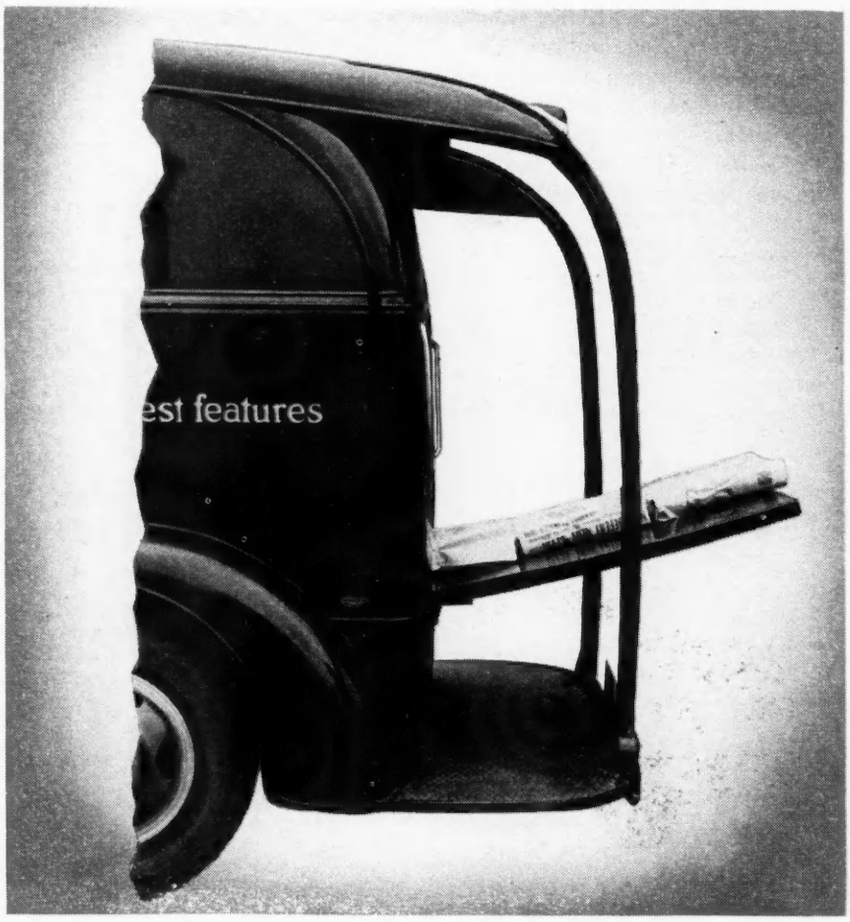
THE remarkable feature of this body built by *The Toronto Star* is the rear construction which provides security for the boys who ride on the rear as jumpers. The uprights behind the platform are channel iron welded to the platform framework and connected to the main members of the body to resist the effect of rear-end collisions.

To support the rear platform 3-in. channels were bent and riveted to extend from the chassis side members. These are carried to the rear of the platform, at which point a 3 x 2 x ¼ in. angle iron, forming a rear bumper, is fitted. The 3-in. channel is strengthened by a 2 x ¼ in. angle iron extending from the lower side of the side member to the bottom of the channel supporting the platform. A second pair of platform supports of 2 x ¼ in. angle iron are carried from the rear body bar about 6 in. from the outer side of the platform.

The platform itself is a 3/16-in. checker plate. To form rear supports extending from the platform 2 x ¼ in. angle iron is used. The supports are wood-filled and metal-covered and carry the pivot bar for the tail-gate.

The lower rear panel is the tail-gate. It is pivoted near the center to provide a sloping tail-gate for loading purposes. When the truck is loaded, it locks in the upright position.

The top rear panel is a piece of flexible spring steel which slides in fairly tight grooves in each upright.



The upper panel stops 11 in. above the tail-gate, giving rear vision to the driver and jumper and at the same time giving protection from the weather.

The tail-gate, which is 1¾ x 3/16 x ½ in. channel iron, wood-filled and braced, is pivoted 2½ in. above the center. It is fitted with a double action van lock, locking in the angle iron uprights and controlled by a finger lever set in flush with the top of the tail-gate. The tail-gate is locked in the open position by a trip catch, which can be operated from either side of the vehicle. By looking closely at the point where the panel meets the body proper, the small handle which releases a catch when the panel is tipped to the upright position, can be seen in an accompanying illustration. There has to be some support for the panel, otherwise the weight of the bundle (or a loader) would drop the panel to its upright position.

The rear license plate is illuminated by a special light which is set in the "bulge" in the rear angle iron which forms a bumper. The license is fastened to the angle iron and naturally does not move with the rear panel. Twin tail lights are provided, and twin clearance lights are mounted on the roof. The rear handles were designed so that they would interfere as little as possible with the lines of the truck, and are bolted through the corner post for absolute security.

To improve weight distribution, the gasoline tank was fitted between

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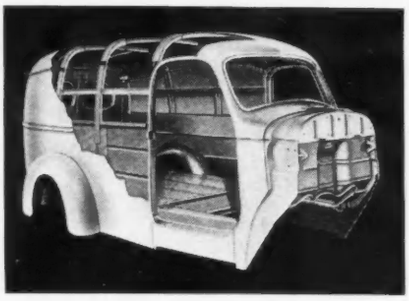
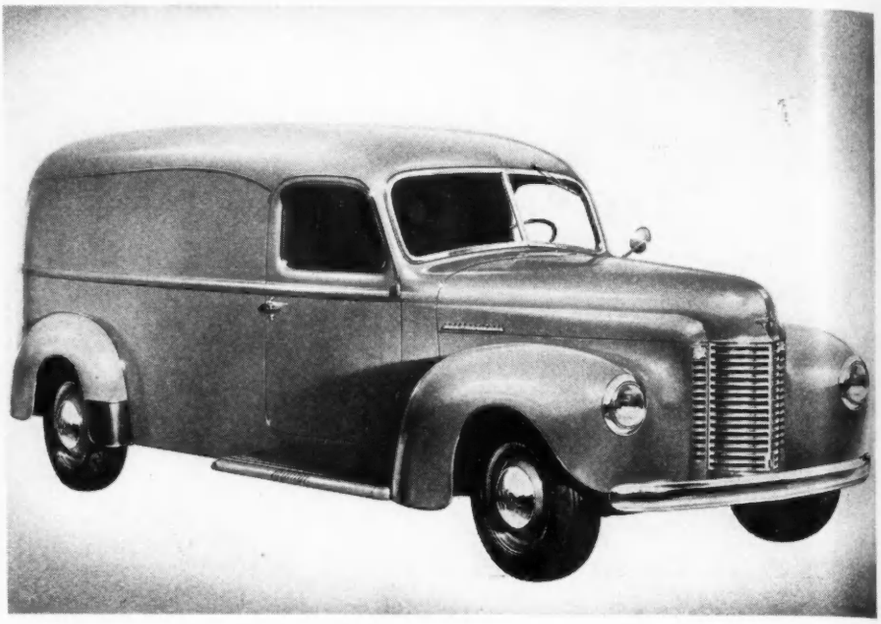


The sectional view, above, shows all-welded steel construction of new panel bodies such as the one at right. Available for K-1, K-2 and K-3 models

Below: Standard 8-foot stake body on 130-in. model K-3 (left) and streamlined custom-built stake body on 159-in. K-5. Note two-color treatment



INTERNATIONAL

INTERNATIONAL Harvester Co. has announced a new series of five handsomely styled truck models, and a newly designed engine available in three sizes. The trucks fall in the ½ to 1½-ton (4400 to 13,500 gross vehicles weight) classification. Two of the new engines are standard on the models in the series and the third —an economy engine—is available on any of the five models if desired.

The new Internationals are:

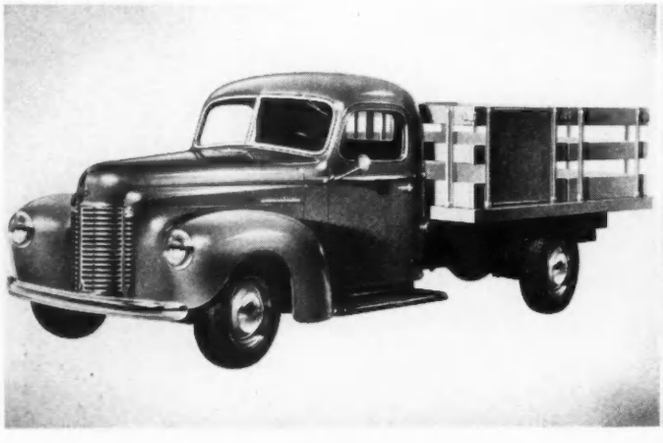
Model	Wheelbase	Tonnage Rating	Carrying Capacity*	Gross Vehicle Weight
K-1	113 and 125	½	2100	4400
K-2	125	¾	2900	5200
K-3	113 and 130	1	3800	6650
K-4	113,135,147,159	1¼	6000	10,000
K-5	135,147,159,177	1½	9300	13,500

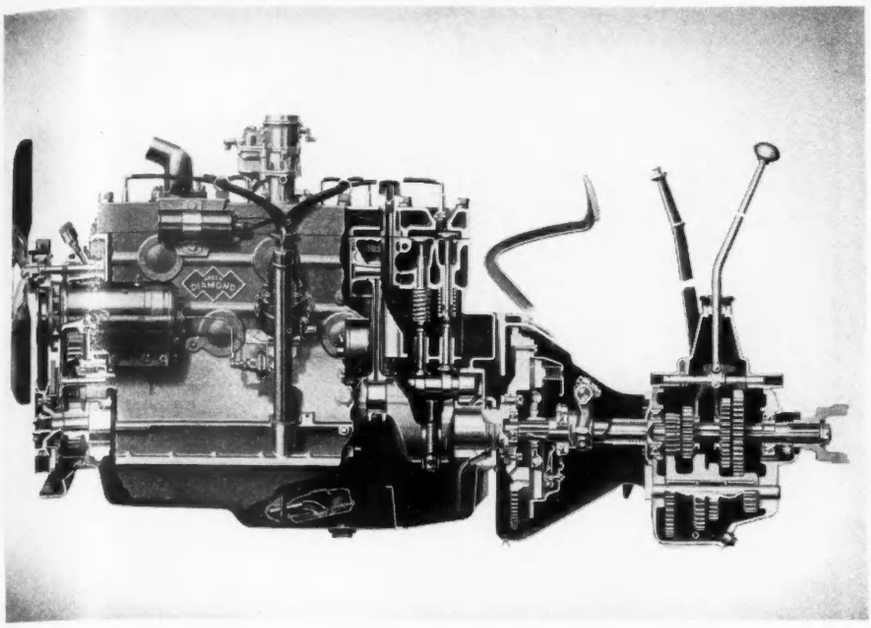
* Cab, body, equipment and payload.

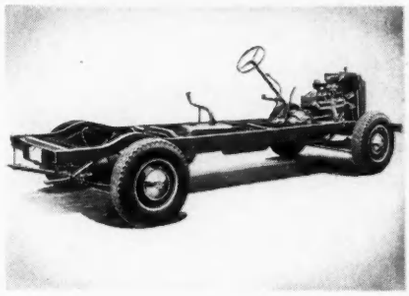
Outstanding among many mechanical features of the new models is the newly designed "Green Diamond" L-head engine which, in three sizes, powers the five new models. A far-reaching testing program has proved the ability of these engines. More power, greater fuel economy, and quieter operation are features of the new Green Diamond engines.

The greater power and fuel economy are the result of new manifolding, new cam contours, and new combustion chambers that are higher and more rounded in shape than those used in previous International engines of the same size. In addition, the spark plug is located near the center of the chamber. The new construction greatly improves the thermal efficiency, giving more miles per gallon of fuel.

The new Green Diamond engine used in the ½, ¾, 1 and 1¼-ton







The new K-3 chassis, above, has carrying capacity of 3600 lb. including cab body and load. Gross weight is 6650 lb.

Left: Cross section of the new Green-Diamond engine available in 93 hp. and 82.8 hp. regular sizes and in a 64 hp. economy model. An unusually high torque curve is produced by all three

FOR '41

Adds new K series in ½ to 1½-ton range. Five models, eight wheelbases, new engine in three sizes and new rear brakes are provided

truck models has a 3 15/16-in. bore and 4⅛-in. stroke. It develops 82.8 brake hp. at 3400 r.p.m. The new Green Diamond engine for the 1½-ton truck model has a 3 5/16-in. bore and 4½-in. stroke and develops 93 hp. at 3400 r.p.m. The compression ratio of both engine models is 6.3 to 1.

In addition, there is a new "Economy Six" Green Diamond engine with 3-in. bore and 4⅛-in. stroke, available for all models. This one develops 64 hp. at 3300 r.p.m. and has a compression ratio of 6.7 to 1. All three new engines are designed to use standard fuels.

The torque of all three engines remains high over a wide speed range. Maximum torque of the 82.8-hp. engine is 158 lb.-ft. at 1100 to 1500 r.p.m., of the 91-hp. engine is 181 lb.-ft. at 800 to 1200 r.p.m., and of the "Economy Six" is 120 lb.-ft. at 800 to 1000 r.p.m.

The clearance between tappets and valves has been increased. In spite of increased clearance, the engines are unusually quiet and smooth running. The quietness has been achieved by new and scientifically shaped cams.

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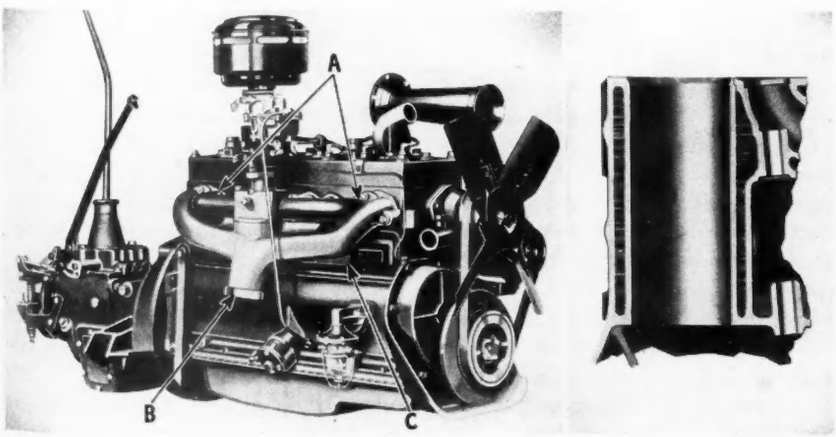


Left: Manifold side of new Green Diamond engine shows (A) pilot rings at each end of intake manifold to assure perfect alignment with ports; (B) tapered outlet of exhaust manifold well away from greatest heat, and (C) metal shield between valve tappet cover and exhaust manifold which serves as heat insulator to protect gasket. Inverted type fuel pump is also in cool position. The full length water jackets completely surround each cylinder and the intake and exhaust valve ports

A new hydraulic brake known as the Hi-Tork brake manufactured by the Wagner Electric Corp. has been introduced by the International Harvester Co. on the rear wheels of the International models K-4 and K-5 with gross vehicle weight ratings of 10,000 lb. and 13,500 lb.

Specifically it is felt that the following results have been accomplished in the new brake:

1. Both shoes do almost exactly the same amount of work; as a result linings are loaded uniformly and there is no tendency toward localized high-pressure areas which tend to destroy both lining and drum.

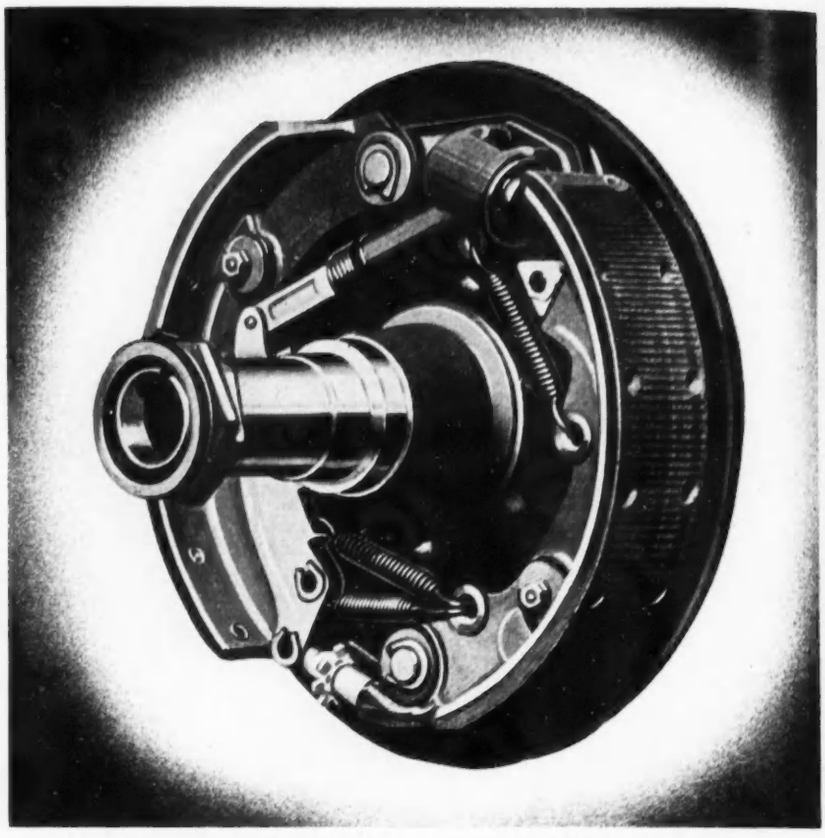
2. Shoes conform to the conventional Lockheed design which has plenty of satisfactory experience behind it, the chief difference being that the rear shoe is turned around and operated by a long lever instead of directly by the hydraulic piston. This has the effect of making both shoes self-energizing for a forward stop.

3. Because pressures are uniformly distributed and each unit of brake area does almost exactly the same amount of work, the need for very large brakes is eliminated.

4. Drum life, due to uniform lining pressure and heat distribution, has been greatly lengthened.

5. Only one hydraulic cylinder is used and the same method of bleeding has been employed as in the conventional Lockheed design.

6. Easy adjustment features have been built into the Hi-Tork design, but due to the even wear of the linings in both shoes adjustments are naturally less frequent.



The rear shoe of the Hi-Tork brake is anchored at top and actuated at bottom by an angled cylinder and piston operating a lever through a connecting rod

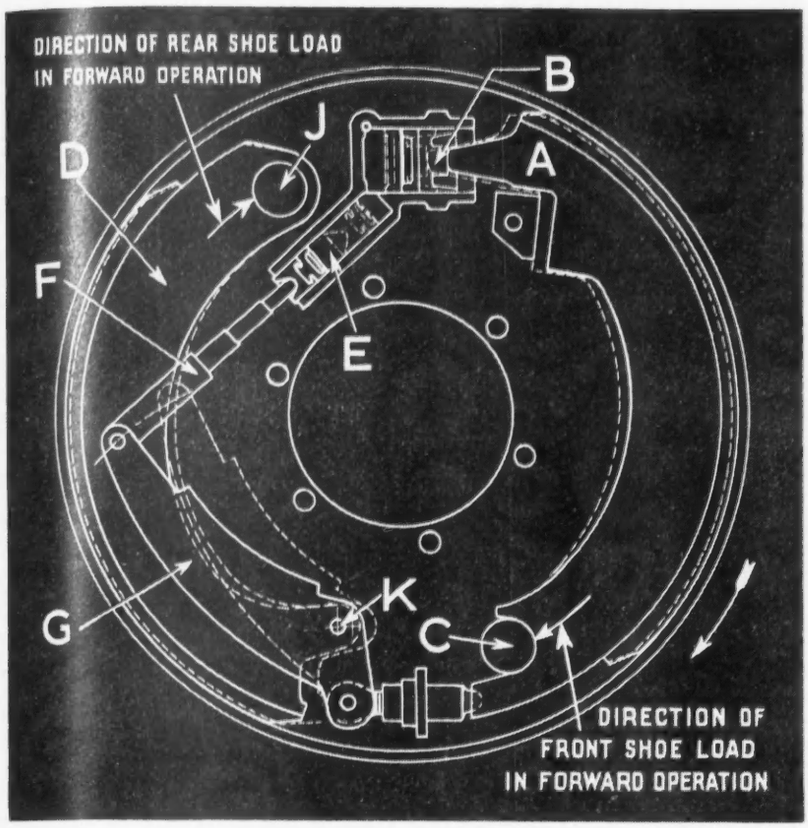
HI-TORK BRAKES E

New Wagner brake, introduced by International Ha self-energizing and each doing the same amount of w

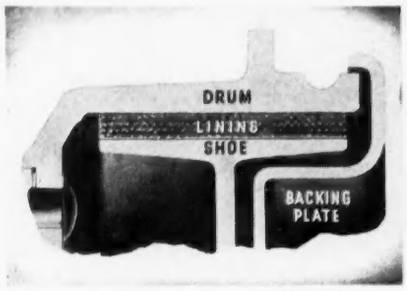
Early in the experiments it was realized that the problem largely centered around developing rear wheel brakes of adequate effectiveness. Usually approximately 70 to 80 per cent of the gross weight of a conventional four-wheel truck of 1¼ or 1½-ton capacity is carried on the rear wheels and only 20 to 30 per cent on the front wheels. If conventional two-shoe double-anchor brakes were used on the rear wheels they would have to be larger in diameter in order to have the effectiveness required. This is because in the conventional internal-expanding brake the work is not divided equally between the two shoes. One shoe, being self-energized, does most of the work required for a forward stop and the other does most of the braking on a reverse stop. Large diameter brakes would necessitate large brake drums which would have relatively small space around them for ventilation and would also require heavier brake linings which would be expensive to replace.

The endeavor, therefore, was to develop an effective way of distributing the braking load equally over both shoes when making a forward stop. This was accomplished in the Hi-Tork brake by the simple expedient of turning one shoe around and anchoring it at the opposite end, as shown in the accompanying diagram. This puts both shoes in their natural position to be fully energized from drum rotation.

The parts used in both the Lockheed and the Hi-Tork brake are equally simple. Only one hydraulic cylinder is used in each brake. The number of pistons, cups and joints in the hydraulic system is the same.



Detailed operation of brake is outlined in the article. With two energized shoes equal effort and equal wear reduce maintenance and increase efficiency



Section shows center located rib and gutter which throws dirt from brake

EQUALIZE EFFORT

Harvester, is a two-shoe hydraulic with both shoes of work, making it possible to use less lining area

The Hi-Tork cylinder has one large-bore, short-stroke piston and one smaller-bore, long-stroke piston and is so designed that all air bubbles tend to rise to the bleeder hole, thereby retaining the same simplicity and ease of bleeding the system that has been a feature of the Lockheed-type brake.

Operation of the Hi-Tork hydraulic brake is as follows:

When the brake is applied forward shoe *A* is forced against the drum by piston *B* in the usual manner. The shoe is anchored at *C*, which represents conventional practice. However, rear brake shoe *D* is forced against the drum by piston *E*, rod *F* and lever *G*. Since the rear shoe is applied at *H* and anchored at *J* it has the same relation to drum motion that forward shoe *A* has and as a result it is energized to the same extent. Note that cylinder and piston *E* is smaller than cylinder and piston *B* since the rear shoe has the advantage of considerable leverage. The combination of lever length and piston size must give the same input force as that delivered by piston *B*.

When the direction of the vehicle is reversed and the brakes applied the rear shoe cannot pull away from anchor *J* but since shoe *A* can pull away from anchor *C*, point *K* becomes the fulcrum forcing shoe *A* against the drum from the anchor end as well as from the cylinder end.

The increased effectiveness of the Hi-Tork brake, due to both shoes dividing the braking load equally, makes it unnecessary, it is claimed, to have as many square inches of brake lining area as are required with other types of brakes. It is pointed out that on some vehicles there is a great deal of difference between the total lining area and the amount of lining area that does the work. What counts is the amount of lining that is applied with complete effectiveness. The permissibly smaller diameter brakes permit the use of drums of a size which give greater clearance between the drum and the tire rim and therefore provide better ventilation for the dissipation of heat.

Brake drums on all four wheels of the five new International models also have been improved to provide better dissipation of heat. This has been accomplished, as shown in an accompanying sectional illustration, by locating the drum reinforcing rib so that it is surrounded by air on both sides and on top. This rib is close to the center line of the brake, greatly reducing the possibility of excessive drum distortion and brake noise. The location of the reinforcing rib also leaves room for a groove between the reinforcing rib and the backing plate. This groove serves as a self-cleaning dirt slinger which prevents dirt from entering the brake.

A COUPE Express powered by the Champion engine and a line of Standard and Heavy Duty trucks have been announced by the Studebaker Corp. Completely new appearance, the use of the new Hi-Tork brake on the two larger models, and a new type and arrangement of steering linkage feature the new offering.

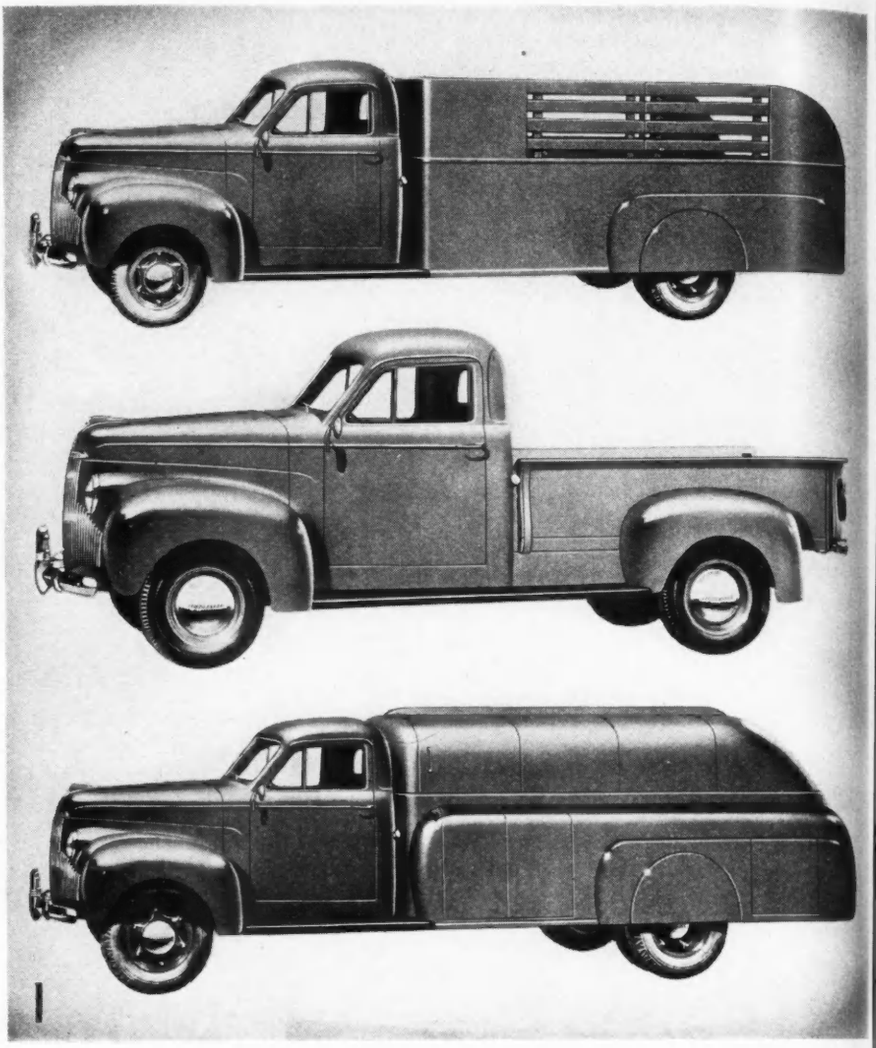
In the new line, driver vision has been increased, frames have been made heavier and engine horsepower has been increased. Extremely low centers of gravity have been engineered into each model to add to surefootedness and stability, and special attention has been paid to safety.

An outstanding feature is distinctive styling, emphasized by low-cooling grille treatment. The hinged hood has the hood lock inside the cab, and sealed-beam headlamps are mounted in the catwalk. Deeply crowned fenders sweep low in the front.

A new all-steel three-man coupe cab is used on all models. It is insulated against vibration, noise and temperatures. The cab has extra-deep adjustable cushions and seat back. The instrument board has a radio opening and large package compartment. Rotary door latches, controlled ventilation, generous head and legroom make the driver comfortable. The cab is Bonderized to prevent rust. The windshield has extra width for greater safety.

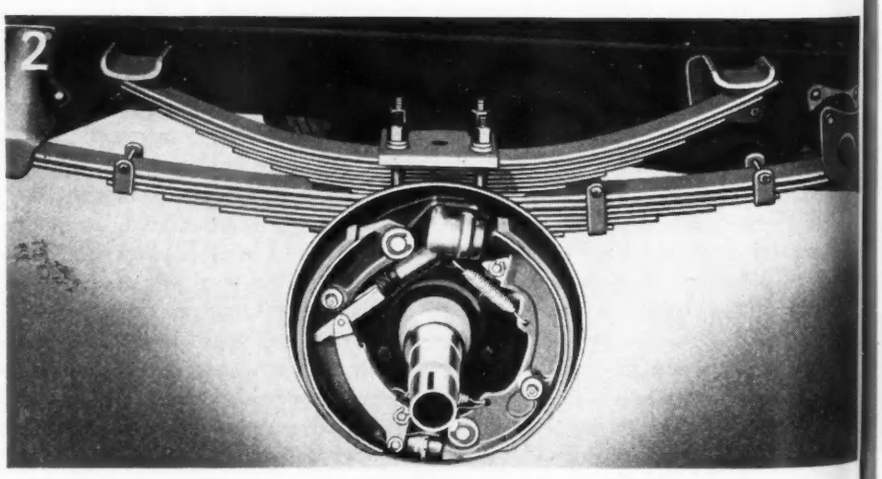
The front and rear fenders on the Coupe Express and the 120-in. wheelbase Standard Express are interchangeable—as are the right and left running boards.

One of the important steps forward is the location of the engine and the front axle. This has resulted in shorter wheelbases, improved weight distribution, and increased maneuverability. At the same time, the cab to rear axle dimensions have been increased rather than penalized, giving all models a load center well in advance of the rear axle.

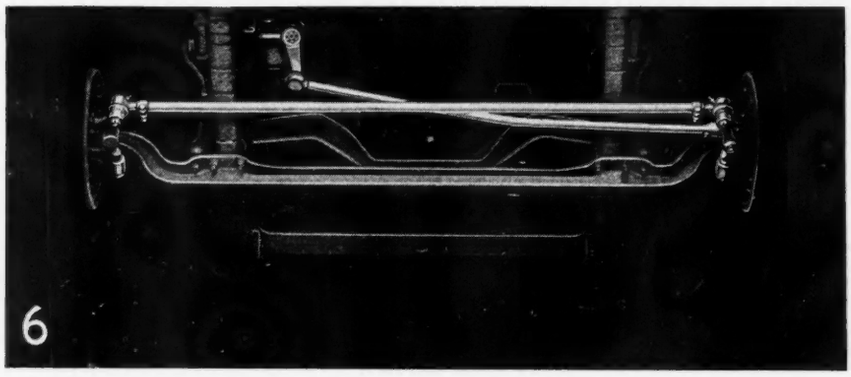


STUDEBAKER

Offers Three New Series in Coupe-Express, Standard



1. A 12-ft. de luxe stake body (top) is shown on new Studebaker Standard truck; this one has 152-in. wheelbase. Next, the 113-in. Coupe-Express using Champion engine. The 900-gal. tank is on a 152-in. Heavy-duty model



FOR '41

and Heavy-duty Types

To add to impressiveness of appearance, Studebaker offers at extra cost a de luxe equipment group including colored fenders and a number of items, such as radiator grille, radiator ornament, and body moldings of stainless steel with chrome finish. Chrome grille guard and bumper guards are also available.

Models in three capacities compose the new line. Of these, Studebaker is spotlighting the Coupe Express, a 113-in. wheelbase two-purpose commercial car with a 6 ft. 6 in. express body, disk wheels and 6.00/16 tires. This unit follows in the footsteps of previous Studebaker Coupe Express models by featuring its availability for both passenger car and commercial car use. It has basically the Studebaker Champion engine. Spare wheel, tire and tire carrier are standard, being located between the frame side rails at the rear.

Next is the Standard truck, designed for general hauling service or bulky but light loads. It is built in three wheelbases—120-in. for 8-ft. bodies, 128-in. for 9-ft. bodies, and 152-in. for 12-ft. bodies. Cast spoke wheels with 6.00/17 tires are standard, single front and rear. Dual tires, rear, are available at extra cost, as are 20-in. cast spoke wheels, either single or dual rear. Disk wheels are also available. Where service requirements demand larger tires, they are available at extra charge.

The third unit in the new line is the Heavy Duty truck. Powered with the Studebaker 94 hp. engine and fitted with an unusually sturdy frame and heavy duty rear axle, it provides a thoroughly competent unit for severe operating requirements. It is built in three wheelbases—128-in. for 9-ft. bodies or tractor service, 152-in. for 12-ft. bodies, and 195-in. for 18-ft. bodies.

The two express bodies—6½-ft. and 8-ft., supplied as original body equipment, are of welded steel construction with heavily ribbed floors, adding to their rigidity. The upper edges of the flare boards are rolled, while the tail gate is heavily embossed and when down is supported by two heavy fabric covered chains.

Studebaker engines are used exclusively. Features common to these engines are light weight aluminum alloy, cam ground, heat dam, tin-plated three-ring pistons, full-length water jackets, controlled water circulation, full-pressure lubrication, even to the timing train and valve tappets. Other features are floating oil screen, heavy drop-forged steel, four-bearing crankshafts with integral counter weights, four large precision-type main bearings, automatic manifold heat control, automatic spark control, full voltage and current control, and high turbulence heads.

All models have single plate ven-

(Turn to Page 96, Please)

2. New "Hi-Tork" brake (far left) is used on rear wheels of larger trucks.

3. All 1941 models have automatic spark control and an octane selector.

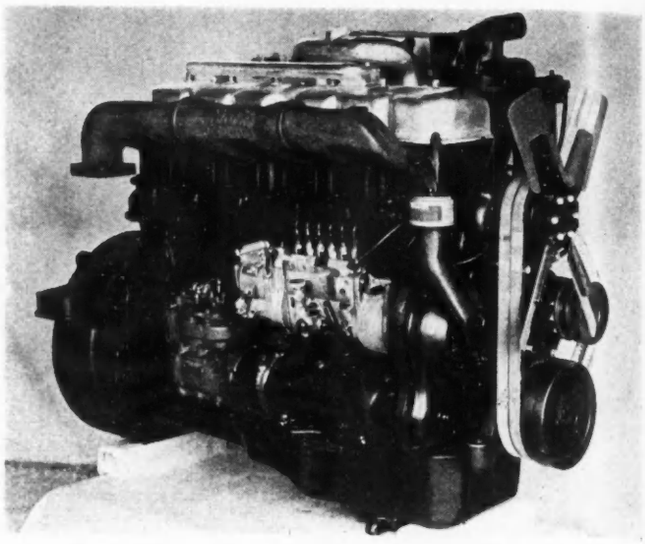
4. Massive front-end construction includes box-type frame cross member. Rubber bushings are used on springs

5. Deluxe accessories, including special grille, enhance the appearance.

6. New-type cross steering mechanism has spring-loaded ball and socket joints. I-beam axle is heat treated

NEW TRUCK ENGINES

MACK • HERCULES • AUTOCAR



Injector side of the new Mack Model END 605-in. diesel

MACK-LANOVA 605-IN. DIESEL

TO meet demands in the heaviest hauling field, Mack Trucks, Inc., has announced a new Model END-605 Mack-Lanova diesel. Similar in design and principle to the 519 cu. in. Model ED engine, this new END-605 diesel has a piston displacement of 605 cu. in. and bore and stroke of 4⅝ in. x 6 in. It operates at the same maximum speed of 2000 r.p.m. as the smaller Mack ED diesel and develops 144 hp. at that speed. Maximum torque at 1100 r.p.m. is 455 lb.-ft.

One of the most important claims of this new diesel is, that like other Mack-Lanova diesels, it combines smokeless combustion with high power, high speed, and smooth running.

Some of the reasons why this diesel produces full rated power without smoke may be thus enumerated: The Lanova energy cell in combination with Mack's combustion chamber design is used in this engine, and all Mack diesels offer more thorough combustion and greater tolerance for different fuels. Higher grade pistons, rings, valves, and liners in these Mack engines resist wear and heat better and longer. Permafit exhaust valve seat inserts endure indefinitely and prolong valve life. Valves are firmly guided and close accurately and evenly. Cylinders, which are of heat-treated alloy, do not distort, and gaskets stay tight because of multi-studded and deep-section heads.

Other reasons for full rated power without smoke in this new END-605 Mack Lanova diesel include long-shank nozzles which may be cooled better, a Mack Synchrovance injection timer which reduces shock at low speeds, and a flange-mounted injection pump with fully enclosed tamper-proof direct gear drive. The injection pump is a self-contained multiple-unit protected against maladjustment in the course of ordinary engine maintenance. Full scavenging and low pumping losses are effected by valves which open directly into the combustion chamber.

TWO HERCULES FLAT DIESELS

HERCULES Motors Corp. has announced a new series of flat diesel engines, the DWX series. The DWXC has a bore of 4 in., a stroke of 4¾ in. and a piston displacement of 358 cu. in. The DWXD has a bore of 4¼ in., a stroke of 4¾ in. and a piston displacement of 404 cu. in. Both have six cylinders. The DWXC has an output of 108 hp. at 2400 r.p.m. and the larger engine produces 115 hp. at 2200 r.p.m.

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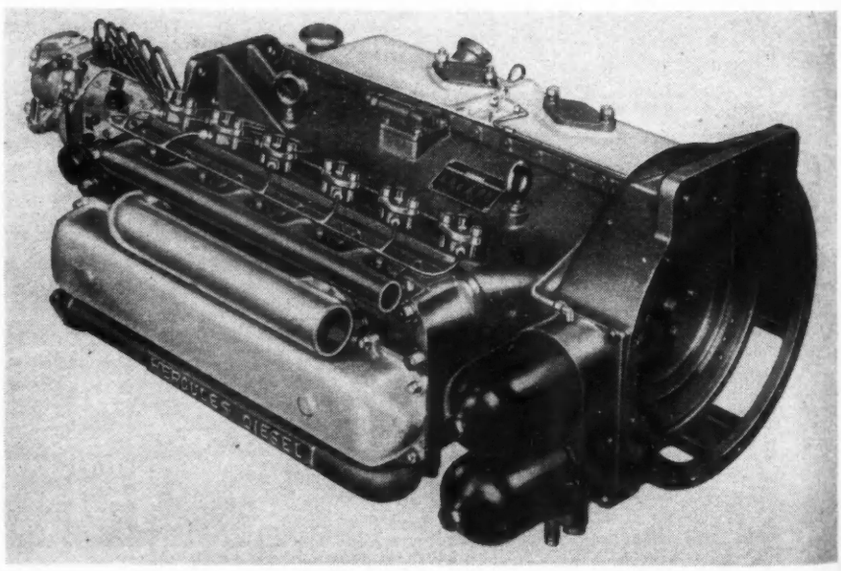
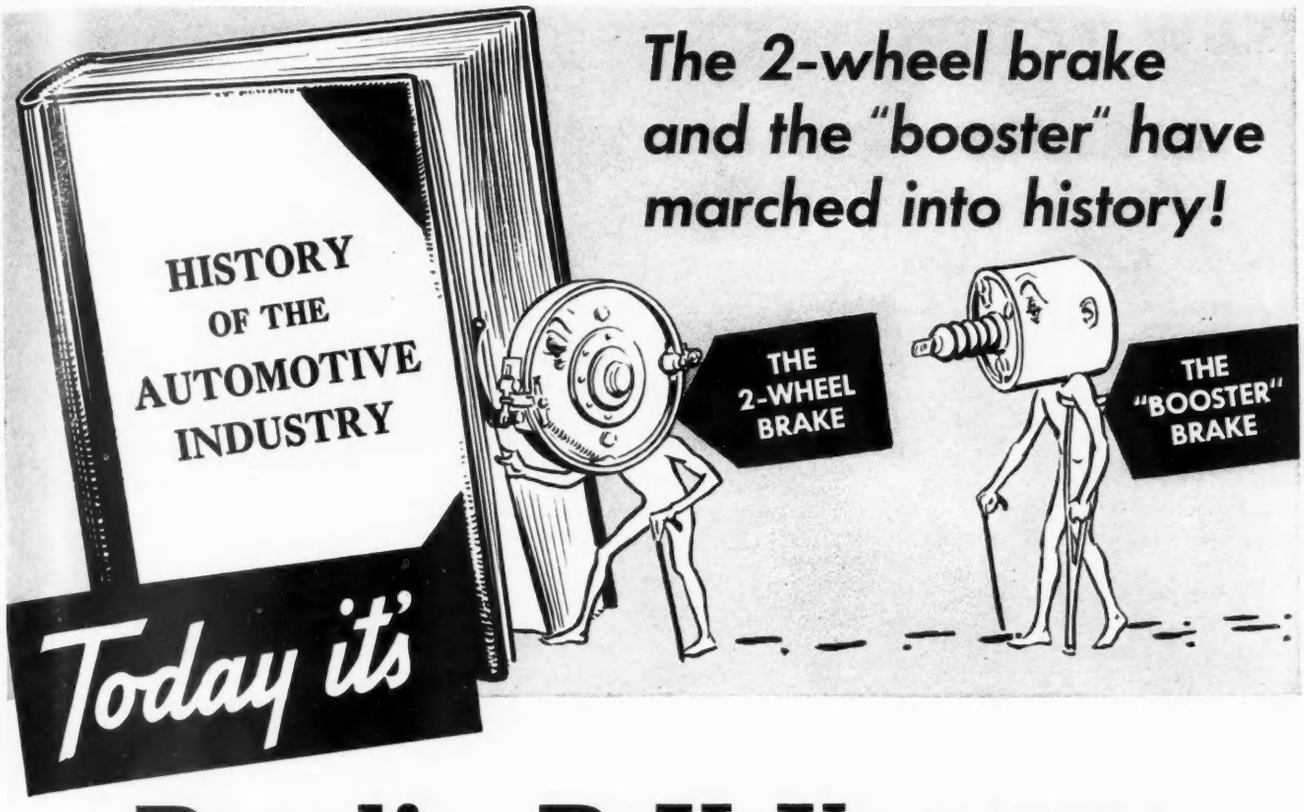


One of the new Hercules DWX flat diesel series offered in 358 and 404 in. sizes



The 2-wheel brake and the "booster" have marched into history!

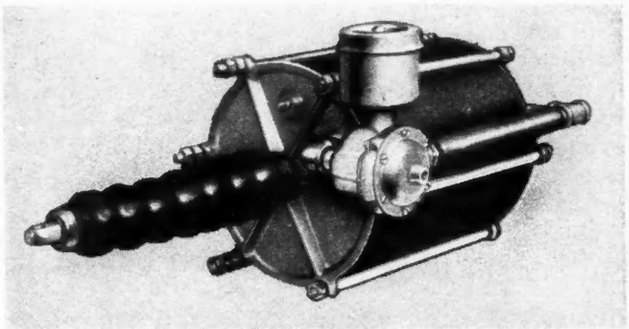
Bendix B-K Vacuum Power Braking

WHEN 35 miles an hour was tops in truck speed and traffic was light, B-K brakes were called "boosters"—and they were tops in those days in stopping ease.

But speed, and power, and truck weight, and traffic congestion long ago spurred Bendix research to achievements in power braking hardly dreamed of in those early days of the automotive industry.

Today's enormously powerful and vastly refined Bendix B-K "Controlled Vacuum" Power Braking, while unchanged in basic principle, has taken over all but a small fraction of the work of stopping formerly done entirely by sheer muscle-power.

Today's "super-power" installations require little more physical effort from the driver than that required to open the operating valve.



LOOK TO BENDIX B-K POWER BRAKING FOR TODAY'S LEADERSHIP . . . AND TOMORROW'S

Interested engineers of truck design are cordially invited to confer

BENDIX PRODUCTS DIVISION OF BENDIX AVIATION CORPORATION, SOUTH BEND, INDIANA

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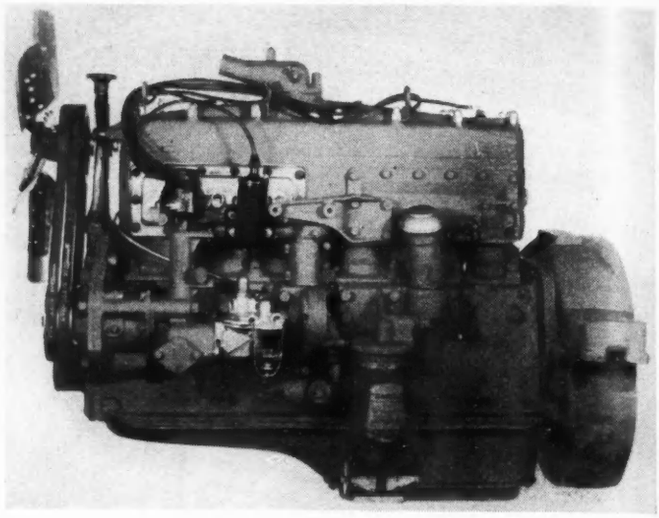
NEW TRUCK ENGINES

HERCULES **(Continued from page 38)**

Both engines have dry-type sleeves of special alloy in the integral block and crankcase. Pistons are of heat-treated aluminum alloy and have full-floating pins. Valves are overhead and exhaust valves are of silchrome steel.

Lubrication is forced feed to all points using a dry oil sump and scavenger gear pump. The 3½ in. crankshaft is surface-hardened and is supported by seven main bearings. The longest is 3½ in. and the shortest is 1 11/32 in. Connecting rod bearings are 2¾ in. in diameter.



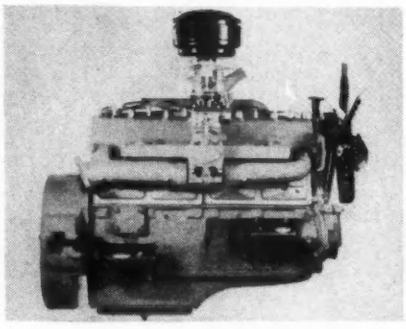
Right: 337 in. COE Autocar model fitted with up-draft carburetor and inverted oil filter. Below: Same engine for conventional models has down draft carburetor

AUTOCAR 337-IN. BLUE STREAK

THE Autocar Co. has added a new 377 cu. in. engine to its line of Blue Streak engines. The new engine, designated by its displacement, is called the No. 377. It has a bore of 4 in. and a stroke of 5 in. Maximum horsepower is 112 at 26 r.p.m. Maximum torque is 290 lb. ft. at 1100 r.p.m. Compression ratio is 5.75 to 1. Equipped with starter, generator, coil, distributor, carburetor, air cleaner and fan, it weighs 1215 lb.

The cylinder block is a chrome nickel alloy. It is anchored on the crankcase by 18 ½-in studs. Inside the cylinder block the cooling water is taken directly from the water pump through a passage between Nos. 3 and 4 cylinders and is conducted into a gallery that runs the length of the block directly under the valve pockets. Through openings in the top of the gallery, water is directed to the exhaust valve seats.

Hardened inserts are used as seats for the exhaust valves. Exhaust valve head diameter is 1 25/32 in. while intakes are 1 29/32 in. Stem diameter is 7/16 in.



Precision bearings of copper lead are used. Seven main bearings give a total projected area of 38.69. The crankshaft is Tocco hardened. Pistons have four rings all above the piston pin. The oil ring is 3/16 in. wide and others are ⅛ in. wide. The 21 in. fan has six blades. It is driven by two V belts at 1.36 times engine speed.

The crankcase has an oil capacity of 10 qt. The replaceable cartridge type oil filter is mounted on a cast base. It is a bypass arrangement with oil returning through a drilled oilway in the crankcase. The oil pump has a capacity of 480 gal. per hour at 1800 r.p.m. Water is pumped by a 3⅜ in. impeller with a capacity of 2400 gal. per hour at the same speed.

The engine is fitted with a dual downdraft carburetor for conventional models and an updraft carburetor for COE models. Modification for COE models also includes mounting the oil filter upside down.

PLYMOUTH COMMERCIALS FOR '41 **(Picture on Page 95)**

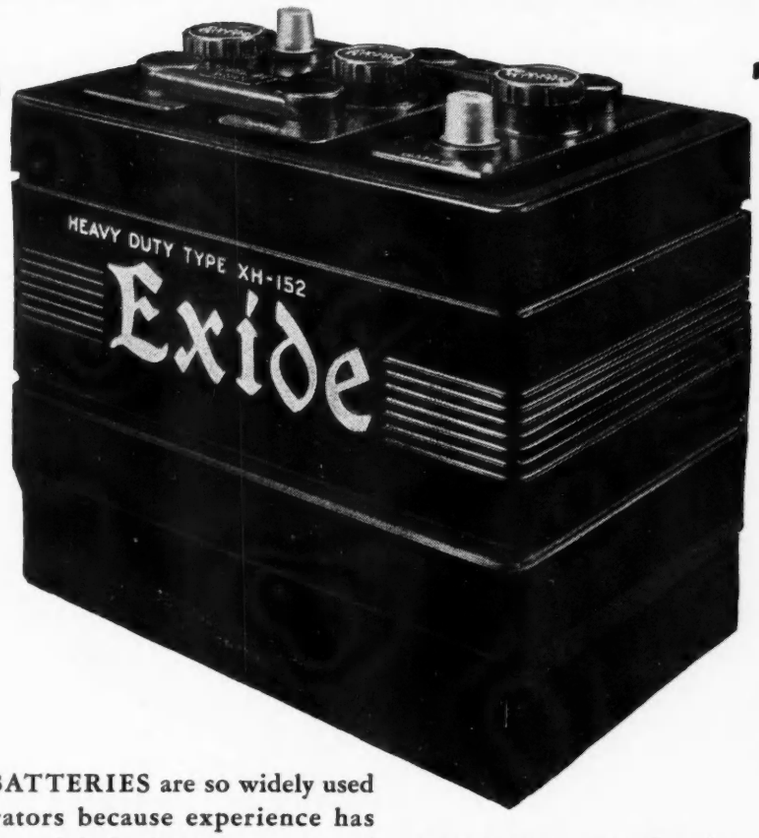
A NEW line of Plymouth Commercial Cars for 1941, presenting a special ½-ton truck-built Plymouth chassis designed to meet the demands of commercial work has been announced. Two models are available—a Commercial Pick-Up with all-steel box and a Commercial Chassis with Cab, on which the user can mount any type of special body best suited to his requirements.

Besides these, two additional commercial models for fast delivery work are being introduced—a new Panel Delivery with exceptional load-carrying space, and a 1941 "Utility" all-purpose sedan. These two models are built on the Plymouth passenger car chassis. Besides new beauty of design, increased engine power and torque and improved economy of maintenance are added features for 1941.

For maximum safety, both body and cab are of solid steel construction, engineered throughout for long life and economy of maintenance. Not only fenders and sheet metal, but the entire cab is rustproofed—an unusual safeguard infrequently found in low-priced commercial models. Oversize dimensions throughout make the cabs easy to get in and out of, as well as unusually comfort-

(TURN TO PAGE 95, PLEASE)

The lowest battery cost per mile that even Exides have ever delivered



EXIDE BATTERIES are so widely used by fleet operators because experience has shown that they minimize battery cost per mile. Among the reasons they do so is their exceedingly long life which spreads the battery investment over an extended period.

This is truer today than ever before. The Exide line of heavy-duty truck batteries now delivers an average of 25% longer life. A remarkable new Exide development has so greatly extended the life of Exide plates that the dependability as well as the life of these batteries has been materially increased.

You pay no premium for these better Exides. They cost no more. But they save money in a fleet from the day they are installed, and they keep on cutting your battery cost per mile during all of their longer life.

The Exide line includes types XH-131, XH-152, XH-173, and XH-194. We also offer these batteries in wood and fiberglas separator construction for "cycling" service. See your Exide Wholesaler today, or write to us.

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HEAVY-DUTY TRUCK BATTERIES

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia
The World's Largest Manufacturers of Storage Batteries for Every Purpose
Exide Batteries of Canada, Limited, Toronto

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SHOWCASE
OF NEW PRODUCTS

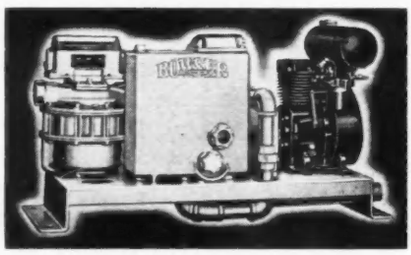
New Sunnen Grinder

A portable crankshaft grinder has been added to the line of motor repair equipment manufactured by the Sunnen Products Co., 7917 Manchester Ave., St. Louis, Mo. The unit is designed to grind crankshafts in or out of the motor. When used as a portable

unit, it is bolted to the fan rail and grinds rod journals in the engine. To precision grind both main and rod bearings, the unit is attached to the rear of a lathe carriage. The grinding operation is of the free-cutting, dry type, no coolants being required. Grinding time is said to vary from 10 to 30 minutes per journal for the average crankshaft.

Bowser Metering Outfit

A new compact, complete metering and pumping unit for installation on tank trucks has been announced by S. F. Bowser & Co., Inc., Fort Wayne, Ind. Known as the Bowser Xactopack, it is made in two sizes and is available with either gasoline or electric power. The unit includes a meter, air release, by-pass, strainer, pumping unit and



power unit mounted on one base. The model illustrated has a capacity of 20 gal. per minute, while the larger model furnishes 40 gal. per minute. A variety of dials may be had, including the Bowser Recording Printer. Light weight and low center of gravity are important features.

American Bosch Grease

As a result of widening use of the temperature-resisting grease employed by American Bosch Corp., Springfield, Mass., to lubricate magneto and generator ball bearings, this high-grade lubricant is now being definitely recommended for other uses as outlined in a recommendation sheet which accompanies each tube.

This grease, which provides proper lubrication at temperatures ranging from 20 to 25 deg. below zero up to 215 deg. above, is said to be ideal for practically all ball or roller bearings. It is packed in one-pound tubes, six to the carton. Five-pound pails are also available for quantity users.

AC "Argo" Oil Filters

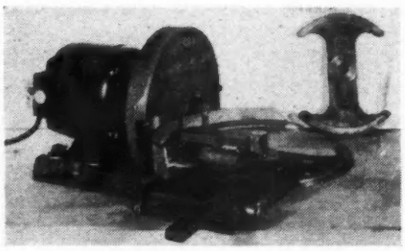
Augmenting its regular line of oil filters, AC Spark Plug Division of General Motors announces a complete line of "Argo" replacement elements for all popular makes and models of oil filters and new low-priced line of "Argo" oil filters and elements for use on tractors, cars and trucks.

The "Argo" elements are of the cotton type, of uniform density and built to give good service. The "Argo" complete filter,

according to the AC announcement, fills the need for a well-constructed, efficient filter at low cost.

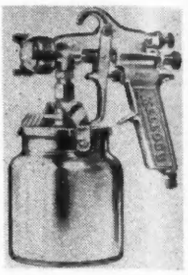
Barrett Brake Shoe Grinder

A low-priced brake shoe grinder, model B-75, has been announced by the Barrett



Equipment Co., St. Louis, Mo. Designed to grind shoes up to 12 in. in diameter, it is provided with plates to handle shoes in steps of 9, 10, 11, and 12 in. Extra plates are available in steps of 13, 14, 15 and 16 in. It is equipped with a micrometer adjustment for grinding shoes to precise brake drum oversize.

Kellogg Spray Guns



A full line of paint spray guns, designed particularly for automotive work, is being offered by the Kellogg Div. of the American Brake Shoe & Foundry Co., 97 Humboldt St., Rochester, N. Y. Features claimed for the new line include easy control of all adjustments, hand-fitting form, non-tiring balance, lightness in weight, simple cleaning and economical replacement of parts.

Valve Converter

A newly-developed tire valve converting tool is being offered by A. Schrader's Son, Division of the Scovill Mfg. Co., 470 Van-

derbilt Ave., Brooklyn, N. Y. Known as No. 1262, the tool is small and compact and can be bolted to the edge of a work bench. It is said to make all standard and special tire valve conversion to all wheel specifications.

New Oakite Developments

A new compound, said to effectively combine grease and oil removing properties with rapid paint stripping action, has been developed by Oakite Products, Inc., 22 Thames Street, New York City. The new material, known as Oakite Stripper M-3, is specially designed for cleaning and for stripping paint from generator housings, shock absorbers, carburetors, fuel pumps, brake shoes, clutch parts and other similar automotive parts before repair. In addition, it has been found highly suitable for cleaning clogged or dismantled radiators before repair. It is a dry, white, free-flowing material, fully soluble in water, and is used in heated cleaning tanks.

Another Oakite development of particular interest to fleetmen is an acid treatment based on a new and improved formula. Following immersion of carburetors, fuel pumps or other parts made of aluminum or zinc base die castings in a solution of Oakite Stripper M-3 to remove oil, grease and dirt, this acid treatment restores average die cast parts to bright condition without the need of scratch-brushing as generally required heretofore.

(MORE NEW PRODUCTS ON PAGE 107)

THESE "BIG JOB" C.O.E. FEDERALS ...WILL CUT YOUR TON-MILE COSTS TO THE BONE..!

TOSS THE TOUGH JOBS TO **FEDERAL**—

A Complete Line of Cab-Over-Engine Models Ranging in Size from 1½ Tons to the Highest Tonnage Capacities.

$795.00 AND UP
F. O. B. DETROIT

Federal meets today's challenge for lower haulage costs with these big, husky, heavy duty, new style Cab-Over-Engine Trucks in four distinct models. Tailored to fit the toughest assignments and built to "take it"—these heavy caliber trucks make themselves felt wherever efficiency and economy count most.

Note the improvements: Bigger payload capacities coupled with shorter over-all length—unexcelled maneuverability and safer highway handling—superior riding qualities and greater rider comforts—increased visibility *Plus* one mighty important trait that has made Federal a "buy" word where dependability and lower cost operations are the rule, not the exception—*economical ton mile costs for the long pull!*

You now have a choice of four more C.O.E. models in the following sizes: 3½—5 tons, 4—6 tons, 5—6½ tons and 5—7½ tons are available. Learn why these last C.O.E. additions make the Federal Fleet the most complete "job fitting" line of trucks in America. Check on these "Big Job" Federals today.

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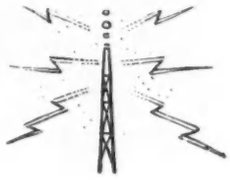
NEWSCAST



ATA Convention Sets New Mark at Los Angeles

True to the much-vaunted superlatives of California, the City of Los Angeles played host to the 2000 delegates of the American Trucking Association's 1940 convention which set a new high in attendance records during the five-day session that opened Nov. 10. Among the highlights were the crowning of a new champion driver, the previewing of the industry's own motion picture and the awarding of trophies to the nation's safest fleets.

Reelected president of the association for the eighth consecutive year, Ted V. Rogers in his annual report cited the progress of the trucking industry with particular mention of the increased cooperation that was apparent. "We have come to trust one another, to work as a team," he said. "Some of the rugged individualism . . . has been rubbed off."

Also reelected for the coming year were the association's ranking vice-presidents. They are: H. D. Horton, Charlotte, N. C., first vice-president; Oren H. Scott, Los Angeles, second vice-president; Henry E. English, Dallas, third vice-president, and C. J. Williams, Milwaukee, Wis., fourth vice-president. Chester G. Moore, Chicago, was reelected secretary, and James B. Godfrey, Jr., Detroit, was elected treasurer, succeeding Lewis A. Railerson.

As a result of the finals of the annual driver "Roadeo" in which 40 finalists from all parts of the country participated, 26-year-old Orville Hoffert of Trans-American Freight Lines, Indianapolis, was declared U. S. champion truck driver.

"Singing Wheels," the industry's own movie, was accorded its world premiere in the appropriate setting of the nation's movie capital. Fifty prints of the picture, which deals in entertaining and instructive manner with the problems of highway carriers, are being distributed to member associations for showing in their areas. The film was produced by the Automobile Manufacturers Association.

Movie Star Victor McLaglen was on hand to make the presentations of the Trailmobile Trophy to the winners in the fleet safety contest, which were: Horton Motor Lines, Charlotte, N. C.; Consolidated Freightways, Portland, Ore., and Boutell Driveaway Co., Flint, Mich.

Keynote speaker of the convention was Frederick C. Horner, assistant to the chairman of General Motors and special consultant to Ralph Budd, head of the National Defense Advisory Commission's transport section. "Transportation," said he in summing up his remarks, "is probably the most important single phase of our defense program."

Other speakers included John L. Rogers, Interstate Commerce Commissioner, who predicted that problems of the industry were far from over and urged a united front. John V. Lawrence, ATA general manager, in briefest analysis, summed up the ever-increasing activities of the association with the resultant need for more and more funds.

The ATA National Safety Trophy, awarded to the state association that does most during the preceding year in promoting highway safety was won again this year by the Pennsylvania Motor Truck Association.

A resolution calling for the total elimination of trade barriers between the several states in the interest of National Defense was adopted by the Board of Directors, and a new natural division of the ATA to be known as the Irregular Route Common Carrier Division was established. Most of the old Common Carrier Division now becomes the Regular Route Common Carrier Division.

Auto-Lite Sets Up Awards for Fleet Safety Directors

To the Electric Auto-Lite Co. goes credit for what is believed to be the first competitive award recognition ever extended to fleet safety directors. Under terms of the new Auto-Lite Awards, safety directors of all fleets winning their classification in the National Truck Safety Contest (present contest closes July 31, 1941) will receive recognition, awards to be made at the 1941 convention of the ATA.

ICC DENIES MERGER

In a brief memorandum to the press dated Nov. 15 The Interstate Commerce Commission announced unanimous denial of the application of the Transport Co. of New York to organize a $25,000,000 merger of some 30 trucking companies in the East. The informality in making known the decision was attributed to the fact that the applicants had asked for a finding on or before the date the announcement was made. A report and formal order are now in preparation.

The decision was contrary to the recommendations of J. Edward Davey, chief of the Bureau of Motor Carriers' Section of Finance as reported in these columns last month. For full details of the issues discussed and the companies involved, see Commercial Car Journal, August, page 34 and Sept., page 40.

Toll Road Truck Traffic Low

Although total traffic volume during the first 31 days of operation of the Pennsylvania Turnpike exceeded estimates by a considerable margin, only 6.1 per cent of the 248,480 vehicles were trucks. The low average toll of 88 cents was an indication that most of the traffic was of a "novelty" or "curiosity" nature.

AAA Discusses Highway Needs for National Defense

President Roosevelt in a message to the 38th annual convention of the American Automobile Association pointed to the immediate need for improvement of the nation's major highway system and of connecting roads to mobilization centers. He told the AAA that it could be of invaluable assistance in the "coordination of normal and military highway use."

Supporting recommendations submitted by the association's Highway and Legislative Committee included: (1) the building up of a priority system of major roads for military requirements; (2) construction of access roads to military establishments; (3) provisions for roads to new industrial centers, and (4) building of express highways through congested metropolitan areas.

Federal Works Administrator John M. Carmody stated that of the 75,000 miles of the existing strategic highway system, 4000 miles are less than 18 ft. wide and 14,000 miles are deficient in surface strength. In addition, 2400 bridges fall below the strength standard and 500 more fail to meet the 18-ft. minimum width recommendation. Even more urgent, however, according to Mr. Carmody, are improvements to 2900 miles of access roads at an estimated cost of $194,000,000. The Public Roads Administration and the Works Progress Administration, he said, are already cooperating with the War Department in determining priority of the needs.

Prompt removal of restraints of trade and artificial price-fixing methods in major industries as a means of clearing the decks for efficient national defense production efforts was urged by Thurman W. Arnold, Assistant Attorney-General.

Thomas P. Henry of Detroit was reelected president of the association.

Tilt Honored at Banquet

C. A. Tilt

Charles Arthur Tilt, founder and head of the Diamond T Motor Car Co. for 35 years, was guest of honor at a surprise testimonial dinner at Chicago's Union League on Nov. 12, tendered by a group of leaders of the automotive and associated industries.

John P. Kelley of A. E. Smith Corp. was toastmaster. Speakers included: H. E. Hendrickson, Mather Spring Co.; Charles Oppe, G & O Mfg. Co.; Willard F. Rockwell, Timken-Detroit Axle Co.; Roy Faulkner, Columbia Axle Co., and Charles A. Dana, Spicer Mfg. Co.

Others on the committee were: Charles Balough, Hercules Motor Corp.; F. L.

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MAINTENANCE COST CUT IN HALF WITH LUBRI-ZOL

Martin Sabatino, the owner of Sabatino Trucking Co. of Albany writes:

"Our trucks daily travel the Catskill, Berkshire, Adirondack Mountains covering such points as Buffalo, Elmira, Binghampton, New York City, Plattsburgh, Boston, and various routes. These routes are tough and our units must be ready for any of them at all times. We average 2000 miles per unit per week with an average load of 29,000 lbs. for a total of 832,000 miles a year.

"Since changing our fleet over to Lubri-Zol fleet lubricants our maintenance problems have been reduced 50%. Your Gum Solvent Fleet Oil has eliminated such things as sticky valves, stuck rings, and sludged up motors. Your Super E. P. Gear Lubricant has reduced our former transmission and differential problems to a minimum.

"We have tried several other types of nationally advertised lubricants but we have never had the satisfactory performance we are now getting with Lubri-Zol, in both our Diesel and gas units."

• Mr. Sabatino's successful experience with Lubri-Zol Fleet Lubricants can well point the way to more economical operation for you, too. Write us about your operation. We'll assign a thoroughly competent fleet engineer to work with you for lower costs. If you happen to have a particularly hard or unusual situation to correct, you'll be assured of the complete analytical facilities of our field service laboratory, together with a thorough report.

Our success in the fleet field is based on the savings we make for our customers. Write today to — The Lubri-Zol Corporation, Cleveland, Ohio.

Buy your oil on the cost per mile.. and save.. with

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ZOL

NEWSCAST (Continued from Page 44)

Burke, Guide Lamp Co.; J. Fred Cast, Firestone Tire & Rubber Co.; E. Gruenewald, Ross Gear & Tool Co.; C. O. Miniger, The Electric Auto-Lite Co.; H. D. Mixer, Eaton Mfg. Co.; E. B. Ross, Clark Equipment Co.; H. H. Timken, Jr., Timken Roller Bearing Co.; W. C. Winkel, Modine Mfg. Co., and J. P. Roche, Roche, Williams & Cunnyngham, Inc.

Private Owners Council to Meet

The second annual meeting of the National Council of Private Motor Truck Owners, Inc., will open at the Pennsylvania Hotel, New York, on Dec. 10, at 10 a. m. Discussions of vital interest to private truck owners will center around these questions:

"How can private trucks best serve in 'National Defense'?" "What new Federal regulations threaten to further restrict private truck operations?" and "How will the 1941 State legislative 'Blitzkrieg' affect private trucks?"

ICC Relaxes Hours Rule for Xmas

In order to facilitate package deliveries during the Christmas rush, the Interstate Commerce Commission has partially suspended Rule 3a, of Part 5 of the Motor Carrier Safety Regulations (the 60-hour week clause) during the period from Dec. 10 to 25 inclusive. The ruling affects only drivers engaged in making deliveries for retail stores, and does not exempt them from Rule 3b (10-hour day). This modification applies to all classifications of carriers.

Hours of Service Rules Modified for Common & Contract Carriers

The ICC's Hours of Service Regulations have been further modified to grant common and contract carriers certain exemptions already given to private carriers. These include: (1) Rule 1 d, modified to permit all stops within a town to be counted as one stop if vehicle is not driven more than 10 miles within the town; and (2) Rule 5 a, modified to exempt drivers from the log requirements when operating wholly within a municipality or adjacent municipalities.

War Dept. Rules Out Competitive Bids for Truck Transportation

The War Department has ended its old practice of requiring motor carriers to submit competitive bids and has now authorized transportation by all highway freight carriers on the standard forms of government bills of lading. Decentralizing of traffic control to permit agents in the field to choose the type of carrier most suited for any particular job is expected to follow.

Other government agencies will presumably follow the lead of the War Department with the net result that highway transportation should be in line for sizeable increases in the amount of its government business.

Fleetman Available

An experienced fleetman is now available in the New York metropolitan area. For the past 18 years he has been in charge of a fleet of trucks using special body designs and meeting the unusually rigid maintenance and equipment specifications of municipal and state government agencies. He is well-informed on body and chassis design as well as thorough maintenance procedure. For further details, address the Editor.

Rules for Drivers in Handy Form

The National Council of Private Motor Truck Owners has prepared a handy, 26-page, pocket-size pamphlet, entitled "Rules for Drivers." It contains a reprint of Part 2 (Driving of Motor Vehicles) of the Motor Carrier Safety Regulations, Revised, together with instructions particularly with regard to the driver's log. Recommended as a manual for all drivers of private trucks in Interstate Commerce, it is available in any quantity at a nominal price. Address communications to the National Council of Private Motor Truck Owners, 1075 National Press Building, Washington, D. C.

Trade Barrier Investigation

Latest organization on the warpath of interstate trade barriers is the Department of Commerce's own Bureau of Foreign & Domestic Commerce. Through local offices, the Bureau has requested information concerning any shipments affecting the national defense program which have been held up for any reason by state laws. Specific information requested is: (1) type of shipment, (2) point of origin, (3) point of destination, and (4) state regulation or administrative order involved.

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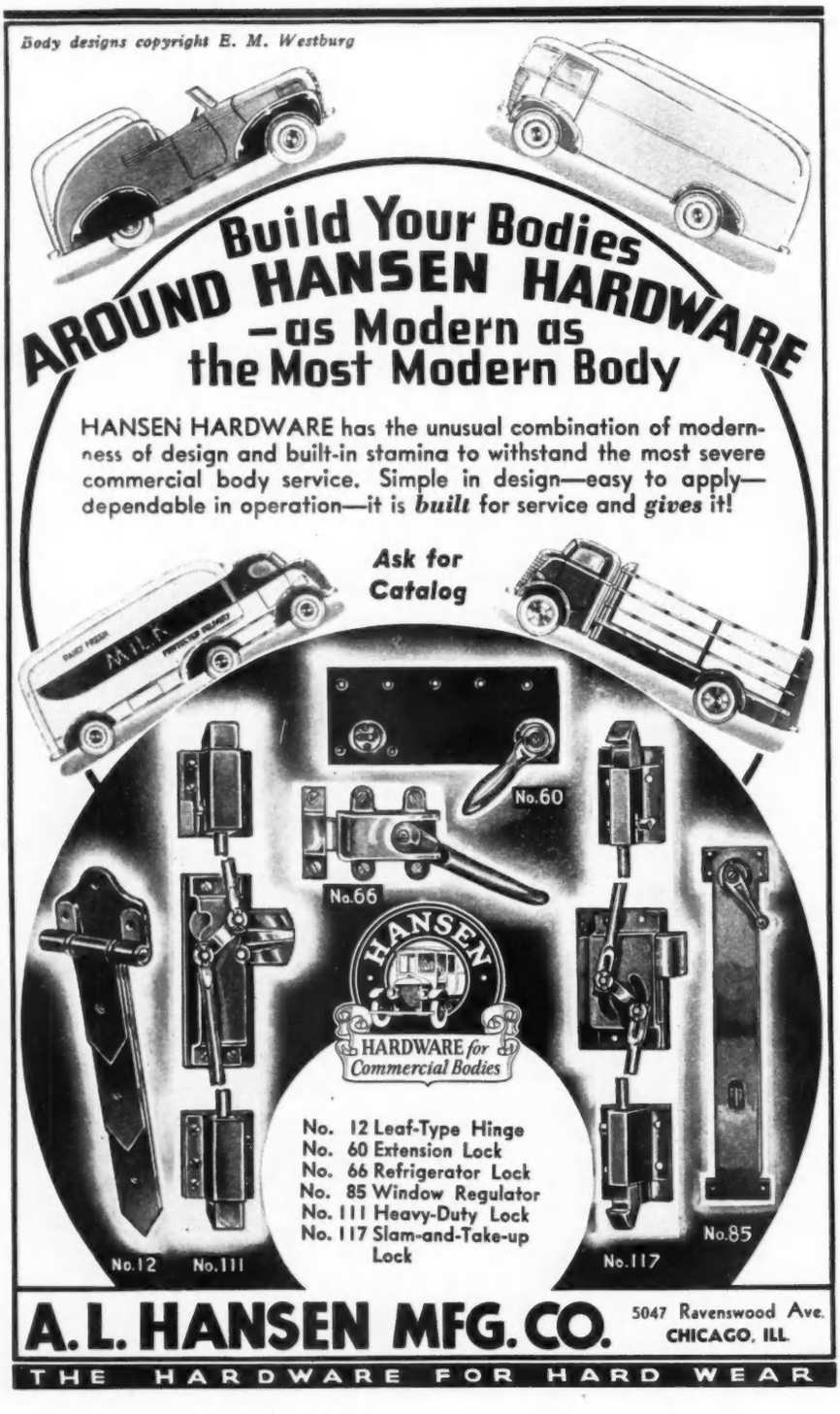
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THE HARDWARE FOR HARD WEAR

Truck SPECIFICATIONS TABLE OF STANDARD DOMESTIC MODELS

TABULATED BY COMMERCIAL CAR JOURNAL

and brought up to date in this issue from data supplied by motor truck manufacturers

KEY TO DEFINITIONS, ABBREVIATIONS AND REFERENCES

DEFINITIONS

MAKE AND MODEL
Only Domestic Truck Models are listed.

OPTIONAL UNITS
For the express purpose of best fitting the truck to the individual job most of the models listed can be provided with optional engines, transmissions, axles, etc., and these models when so equipped are considered standard stock models.

CHASSIS LIST PRICE
The chassis list price applies to the minimum standard wheelbase with standard tires and standard equipment. All prices are F.O.B. factory. Chassis list price does not include the price of the Cab unless otherwise noted.

RECOMMENDED GROSS VEHICLE WEIGHT FOR NORMAL SERVICE
The Gross Weights published herewith are those supplied by manufacturers as their Recommended Gross Vehicle Weights for Normal Operating Conditions, and are based upon the Maximum Authorized Tire Size listed. In actual practice the manufacturer may either increase or decrease the gross vehicle weight rating when either favorable or unfavorable operating conditions are involved. Since the proper performance of a motor truck depends upon many factors, including grades, road conditions, etc., the gross weights that a manufacturer is prepared to recommend will vary with particular conditions, and the manufacturer's own standard of safety factors. Specific recommendations, therefore, should be obtained from the manufacturer's representative.

CHASSIS WEIGHT
The chassis weight listed includes the weight of the minimum standard wheelbase chassis, with cowl, with standard tires, with standard equipment, with crankcase and cooling system full, and 5 gallons of fuel in the tank. It does not include the weight of the Cab. This applies to C.O.E. as well as conventional chassis types. Exceptions are noted.

STANDARD TIRE SIZE
The standard tire size listed is that which is included in the Chassis List Price.

MAXIMUM AUTHORIZED TIRE SIZE
The tire size listed in this column is the maximum size recommended by the manufacturer of the chassis for the Gross Vehicle Weight for Normal Operating Conditions. It is furnished at extra cost, if it differs from the standard size. Dual rears are understood; exceptions noted.

MINIMUM STANDARD WHEELBASE
The minimum standard wheelbase is the so-called standard wheelbase on which the Chassis List Price is based.

MAXIMUM STANDARD WHEELBASE
The maximum standard wheelbase is the extreme end of the standard range of wheelbases offered by the chassis maker.

MAXIMUM BRAKE HP.
Maximum Brake Horsepower at Given R.P.M. is actual dynamometer reading without accessories.

GEAR RATIO RANGE
Gear Ratio Range in High—Ratios within the range given are available at no extra cost. Exceptions are noted.

TRACTORS
Unless given the designation (N)—meaning not available as a tractor—all standard models may be assumed to be available as tractors. Exclusively Tractor models are designated (T).

KEY TO REFERENCES

c.f.—Cab Forward design.

c.o.e.—Cab-Over-Engine design.

(C)—Converted Ford or Chevrolet model, identifiable by engine make listed.

(d)—For dump or tractor service only.

(D)—Diesel-engine equipped.

e.b.s.—Engine-between-seat design.

e.u.s.—Engine-under-seat design.

(N)—Not available as a tractor.

(T)—Designed for tractor use only.

(3) **Available**—All models available in c.o.e. design, oversize power plants, oil engines and six-wheel construction.

(4) **Chevrolet**—Governor set not to exceed 45 M.P.H.

(5) **Condor**—These models available with double drop bus frames.

(6) **Federal**—263 cu. in. engine and 11" clutch available on Models 15 and 75. 404 cu. in. and 428 cu. in. engines available on Models 40 and 45. 428 cu. in. engine available on Models 50, 55 and 50H. 428 cu. in., 501 cu. in. and 517 cu. in. engines available on Model 55H. Oversize or two-speed rear axles available on Models 15, 18, 20, 25, 29, 29H, 35, 40, 45, 75, 80, 85, 89 and 89H. Double reduction rear axles available on Models 20, 25, 29, 29H, 35, 40, 45, 80, 85, 89 and 89H. Two or three-speed auxiliary transmissions available on all models. Air brakes available on Models 25, 29, 29H, 35, 40, 45, 50, 55, 50H, 55H, 85, 89 and 89H. All above at extra cost.

(6a) Federal models 25 and 85, when equipped with 9.00/20 tires, and either Timken 96411 or Eaton 17000 rear axle, have gross rating of 20000 lb.

(7) **Federal**—Models 29H and 89H when furnished with fishplates, radius rods and 9.75/20 tires are known as 29XH and 89XH and have 25,000 lbs. gross rating.

(7a) **Federal**—Model 62 when furnished with fishplates, 10.50/24 tires and Continental 21RF engine is known as Model 62X and has a dry chassis weight of 10,975 lbs.

(9) **Gramm**—Models 31, 41, 46, 56, 71, 76, 86 and 96 both gasoline and diesel available with double drop bus frames of various wheelbases. 221 cu. in. engine available on Model 21. 263 cu. in. engine available on Models 31 and 41. 282 cu. in. engine and 5 speed transmission available on Models 41, 46, and 56. 320 cu. in. engine and 5 speed transmission available on Models 41, 46, 56, and 71. 404 cu. in. engine and larger 5 speed transmission available on Model 86. Oversize two speed and double reduction axles available on Models 21, 31, 41, 46, 56, 71, 76 and 86 both gasoline and diesel. All other equipment furnished at extra cost.

(10) **Corbitt**—Wheelbases optional—any wheelbase desired furnished at chassis price listed.

(11) **International Harvester**—By "Normal operating conditions" (see definition of Gross Vehicle Weight for Normal Service) is meant operation on comparatively level terrain, over roads with a tractive resistance value of from 25 to 30 pounds per ton of gross vehicle weight and at controlled and uniform speeds within a range of not to exceed 45 m.p.h.

(14) **Reo**—Also available with four speed transmission and bevel gear rear axle.

(15) **Sterling**—Available with double reduction rear axle.

(16) **Sterling**—Diesel powered unit of comparable capacity available in addition to gasoline models.

(18) **Willys**—Advertised list price less Federal tax. Cab Pick-up $525; Cab Stake $545; Panel Delivery $799. Prices, complete with shock absorbers and front and rear bumpers. Standard tires 5.50/16—4 ply; Panel Delivery 6.00/16—4 ply; 6.00/16S—6 ply—optional.

KEY TO ABBREVIATIONS

MAKES—ALL

B—Bendix.
BL—Brown-Lipe.
Bu or Bud—Buda.
Cat—Caterpillar.
Cl or Cla—Clark.
C or Chev—Chevrolet.
Co—Covert.
Con—Continental.
Col—Columbia.
Cum—Cummins-Diesel.
Det—Detroit Gear.
Eat—Eaton.
Fu—Fuller.
F—Ford.
Her—Hercules.
L—Lockheed.
LO—Lockheed front, Own rear.
LW—Lockheed front, Wisconsin rear.
Lyc—Lycoming.
N.P.—New Process.
O or Ow—Own.
Op or Opt—Optional.
Sal—Salisbury.
Shu—Shuler.
Spi—Spicer.
T or Tim—Timken.
TO—Timken front, Own rear.
TW—Timken-Wisconsin.
TWH—Timken Wisconsin Herrington.
WG—Warner Gear.
WH—Wisconsin Herrington.
W-Hes—Waukesha Hesselman.
Wau—Waukesha.
W or Wis—Wisconsin.
WO—Wagner front, Own rear.
Ws—Westinghouse.

BRAKES—SERVICE

Location

2—Two Wheels, rear only.
4—Four Wheels, front and rear.
4r—Four Wheels, rear only.
6—Six Wheels, front and rear.

Type

I—Internal.
X—External.

Operation

A—Air.
D—Hydraulic and mechanical.
H—Hydraulic.
M—Mechanical.
V—Vacuum.

BRAKES—HAND

Location

C—Center of double propeller shaft.
2—Rear wheels.
2/4—Two-wheel brakes effective on all four wheels through driveshaft.
4—Four wheels.
6—Six wheels.
J—Jackshaft.
T—Transmission.
F—Driveshaft.
P—Propeller shaft.

Type

D—Tru-Stop disk.
I—Internal.
X—External.

BRAKE DRUMS

Material

a—Cast alloy iron.
A—American Car Foundry.
c—Cast iron.
C—Centrifuse.
Cl—Copper iron.
D—Dayton.
E—Ermalite.
F—Furnace iron.
G—Gunite.
N—Nickel iron.
p—Pressed steel.
P—Pressed steel.
s—Cast steel.

(Where a combination of any of the above is used, the first reference mark applies to the front and the second to the rear drums.)

FRAME

Type

I—"I" Beam.
C—Channel.
T—Channel tapered front and rear.
L—Channel reinforced with liner.
B—Channel reinforced with both liner and fishplate.
P—Channel reinforced with plate.
TL—Channel tapered front and rear reinforced with liner.
D—Drop Center
Tf—Tapered front.
X—x-Braced.
S—Deep section channel frame with oak insert.

GOVERNOR STANDARD

Y—Yes.
N—No.

REAR AXLE

Final Drive and Type

B—Bevel.
C—Chain.
D—Dead.
F—Full-floating.
Hy—Hypoid.
d—Dual range axle.
2—Double Reduction.
S—Spiral bevel.
W—Worm.
½—Semi-floating.
¾—Three-quarter floating.

Gear Ratios

(*)Ratios other than standard at extra cost.
(**) Only one ratio.

Drive and Torque

A—Radius Rods and Torque Arm.
H—Hotchkiss (springs).
R—Radius Rods.
T—Torque Arm.
U—Torque Tube.

WHEELS DRIVEN

2F—Forward unit of Rear Axle Group.
2R—Rear Unit of Rear Axle Group.
4R—Forward and rear units of Rear Axle Group.
4F—Front Axle and Forward unit of Rear Axle Group.
4FR—Front Axle and Rear unit of Rear Axle Group.
6—All wheels.

UNIVERSITY OF MICHIGAN LIBRARIES

Line Number	MAKE AND MODEL	Chassis List Price	WHEEL-BASE Minimum Standard	WHEEL-BASE Maximum Standard	Gross Vehicle Weight for Normal Service	Chassis Weight (See definition)	TIRE SIZES D-dual rear S-single rear Standard Front and Rear	TIRE SIZES Maximum Authorized Tire Size (Duals unless noted)	ENGINE DETAILS Make and Model	No. of Cylinders, Bore and Stroke	Displacement	Comp. Ratio	Torque lb. ft.	Max. Brake H.P. at R.P.M. Given	Main Bearings Number, Diameter and Length	Governor Standard	TRANSMISSION Make and Model	Forward Sp'ds	REAR AXLE Make and Model	Gear and Type	Drive & Torque	Gear Ratio Range in High	FRONT AXLE Make and Model	BRAKES SERVICE Make Location Type Operat'n	Lining Area	Drum Area	Drum Material	Hand Location Type	C-A Dimension (Min. Std. W. B.)	FRAME Side Rail Dimensions	Type
♦ 1	Avail- (3) C-100	1370	Opt	Opt	11500	4000	6.50/20D	7.50/20	Wau BL	6–3½x4¼	245	5.7	165	73–3000	7–2⅝x10¼	N	WG T9	4	Tim 53514H	SF	H	**–6.6	Tim 30000H	L4IH	266	388	a	TX	60	10x3x¼	T
♦ 2	able C-200	1520	Opt	Opt	12600	4200	7.00/20D	7.50/20	Wau BL	6–3½x4¼	245	5.7	165	73–3000	7–2⅝x10¼	N	WG T9	4	Tim 53308H	SF	H	**–6.6	Tim 30000H	L4IH	304	477	a	TX	60	10x3x¼	T
♦ 3	C-250	1600	Opt	Opt	14000	4300	7.00/20D	8.25/20	Wau BL	6–3½x4¼	245	5.7	165	73–3000	7–2⅝x10¼	N	WG T9	4	Tim 53308H	SF	H	**–6.6	Tim 31000H	L4IH	300	552	a	TX	60	10x3x¼	T
♦ 4	C-300	1795	Opt	Opt	16000	4800	7.50/20D	8.25/20	Wau BM	6–3⅝x4¼	263	5.7	178	78–3100	7–2⅝x10¼	N	WG T9	4	Tim 54411H	SF	H	**–6.8	Tim 31000H	L4IH	328	603	a	TX	60	10x3x¼	T
♦ 5	C-350	1905	Opt	Opt	17000	4900	7.50/20D	9.00/20	Wau BK	6–3¾x4¼	282	5.7	188	85–3200	7–2⅝x10¼	N	WG T9A	4	Tim 54411H	SF	H	**–6.8	Tim 32502H	L4IH	328	603	a	TX	60	10x3x¼	T
♦ 6	C-400	2060	Opt	Opt	20000	5500	8.25/20D	9.00/20	Wau BZ	6–4x4¼	320	5.7	210	86–2800	7–2⅝x10¼	N	Fu 5A330	5	Tim 56410H	SF	R	**–7.4	Tim 32502H	L4IH	328	603	a	TX	60	12x3x¼	T
♦ 7	C-450	2085	Opt	Opt	2050	5550	8.25/20D	9.00/20	Wau BK	6–3¾x4¼	282	5.7	188	85–3200	7–2⅝x10¼	N	WG T9A	4	Tim 56410H	SF	R	**–7.4	Tim 33000H	L4IH	328	603	a	TX	60	12x3x¼	T
♦ 8	C-500	2440	Opt	Opt	22000	6100	9.00/20D	9.00/20	Wau BZ	6–4x4¼	320	5.7	210	86–2800	7–2⅝x10¼	Y	Fu 5A330	5	Tim 58305H	SF	R	**–7.8	Tim 33000H	L4IH	370	684	a	TX	60	12x3x¼	T
♦ 9	C-550	2880	Opt	Opt	23000	6800	9.00/20D	10.00/20	Wau MKR	6–4⅛x4¾	381	5.3	270	90–2400	7–2⅝x12½	Y	Fu 5-A-430	5	Tim 58305H	SF	R	**–7.8	Tim 35000H	L4IH	370	684	a	TX	60	12x3x¼	T
♦ 10	C-600	3320	Opt	Opt	26500	7400	10.00/20D	11.00/20	Wau MZR	6–4¼x4¾	404	5.3	290	106–2400	7–2⅝x12½	Y	Fu 5-A-430	5	Tim 65743H	WF	R	6.8–10.25	Tim 35000H	L4IH	459	793	a	TD	60	12x3x¼	T
♦ 11	C-650	3800	Opt	Opt	26500	8000	10.00/20D	11.00/20	Wau SRLR	6–4⅜x5¼	462	5.5	330	112–2300	7–3x13⅞	Y	Fu 5-A-620	5	Tim 65743H	WF	R	6.8–10.25	Tim 35000H	L4IH	459	793	a	TD	60	12x3x¼	T
♦ 12	C-700	4175	Opt	Opt	35000	8700	10.00/20D	12.00/20	Wau SRKR	6–4⅝x5½	517	5.5	365	126–2300	7–3x13⅞	Y	Fu 5-A-620	5	Tim 66728H	WF	R	6.8–10.25	Tim 26452H	L4IH	544	867	a	TD	60	12x3x¼	T
	13 Bantam	349	75	75	1700	850	4.00/15S	5.00/15	Own	4-2.26x3½	50	7.4	34.1	22–3800	3–2½x1.005	N	WG T48E	3	Spi 10	S	H	**–5.25	Spi 10	O4IM	76	104	P	4I	114	8x2¼x.109	....
	14 Brockway 78	895	138	164	13000	3965	6.00/20D	32x6	Con 24B	6–3¼x4⅜	210	6.0	154	71–3100	4–2¼x6	N	WG T9	4	Tim 53521H	SF	H	5.66–6.6	Tim 30000H	L4IH	255	402	a	TX	65	8x3x¼	T
	15 83	1195	138	176	14000	4100	6.50/20D	7.50/20	Con 25B	6–3¼x4⅝	244	6.2	177	82–3100	4–2⅝x6⅜	N	WG T9	4	Tim 53521H	SF	H	5.66–6.6	Tim 30000H	L4IHV	255	402	a	TX	65	8x3x¼	T
	16 88	1290	150	176	15000	4500	6.50/20D	7.50/20	Con 25B	6–3⅜x4⅜	244	6.2	177	82–3100	4–2⅝x6⅜	N	WG T9	4	Tim 53307H	SF	H	6.2 –6.8	Tim 30000H	L4IHV	298	477	a	TX	71	8x3x¼	T
	17 92	1560	150	188	16000	4700	7.00/20D	8.25/20	Con 25B	6–3⅜x4⅜	244	6.2	177	82–3100	4–2⅝x6⅜	N	WG T9	4	Tim 54411H	SF	H	5.83–6.8	Tim 31000H	L4IHV	329	580	a	CD	83	8x3x¼	T
	18 94	1850	156	188	18500	5050	7.50/20D	8.25/20	Con 25B	6–3¼x4⅜	244	6.2	177	82–3100	4–2⅝x6⅜	N	BL B341	4	Tim 56410H	SF	H	6.16–7.4	Tim 31000H	L4IHV	329	580	a	CD	83	8x3x¼	T
♦ 19	110	1900	156	188	18000	5490	7.50/20D	8.25/20	Con 29B	6–3¼x4¼	288	5.4	192	78–2650	7–2⅝x13	N	BL B341	4	Tim 54411H	SF	H	5.83–6.8	Tim 31000H	L4IHV	329	580	a	CD	83	8x3x¼	T
	20 112	1710	150	188	18000	5150	7.00/20D	8.25/20	Con 38B	6–3¾x4⅜	290	6.0	217	92–2800	7–2½x12	N	BL B341	4	Tim 54411H	SF	H	5.83–6.8	Tim 31000H	L4IHV	329	580	a	CD	77	8x3x¼	T
	21 125X	2075	164	188	18000	5570	7.50/20D	8.25/20	Con 31B	6–3⅞x4½	318	5.5	214	86–2600	7–2⅝x13	N	BL B341	4	Tim 54411H	SF	H	5.83–6.8	Tim 31000H	L4IHV	329	580	a	CD	91	8x3x¼	T
	22 128	1950	156	188	20000	5550	7.50/20D	8.25/20	Con 38B	6–3¾x4⅜	290	6.2	217	92–2800	7–2⅝x12	N	BL B341	4	Tim 56410H	SF	H	5.71–7.4	Tim 31000H	L4IHV	329	580	a	CD	83	8x3x¼	T
	23 130	2245	164	206	20000	6270	8.25/20D	9.00/20	Con 29B	6–3¼x4½	288	5.4	192	78–2650	7–2⅝x13	N	BL B341	4	Tim 56410H	SF	R	6.16–7.4	Tim 32505H	L4IHV	329	580	a	CD	91	8x3x¼	T
	24 130-FS	2525	164	206	20000	6250	34x7D	9.00/20	Con 29-B	6–3¼x4½	288	5.4	192	78–2650	7–2⅝x13	N	Fu 5-A-43	5	Tim 56410H	SF	R	6.16–7.4	Tim 32505H	L4IHV	329	580	a	CD	91	8x3x¼	B
	25 145	2385	176	206	20000	6390	8.25/20D	9.00/20	Con 31B	6–3⅞x4½	318	5.5	214	86–2600	7–2⅝x13	N	BL B341	4	Tim 56410H	SF	R	6.16–7.4	Tim 32505H	L4IHV	329	580	a	CD	103	8x3x¼	T
	26 146	2690	126	206	20000	6060	8.25/20	9.00/20	Con 40B	6–4x4⅜	330	6.0	245	104–2800	7–2⅝x12	Y	Fu 5A330	5	Tim 56411H	SF	R	5.76–7.4	Tim 32505H	L4IHV	370	660	a	CD	53	8x3x¼	T
♦ 27	(T) 147	2855	132	164	.....	6000	8.25/20	9.00/20	Con 40B	6–4x4⅜	330	6.0	245	104–2800	7–2⅝x12	Y	Fu 5A33	5	Eat A617000	SFd	H	Dual Rge.	Tim 32505H	L4IHV	370	660	a	CD	53	8x3x¼	T
	28 150X-4	2680	176	206	22000	6520	8.25/20D	9.00/20	Con 32B	6–4⅛x4½	361	5.4	252	95–2500	7–2⅝x13	Y	BL 3241	4	Tim 56410H	SF	R	5.71–7.4	Tim 32505H	L4IHV	329	580	a	CD	103	8x3x¼	T
	29 150X-5	2710	176	206	22000	6570	8.25/20D	9.00/20	Con 32B	6–4⅛x4½	361	5.4	252	95–2500	7–2⅝x13	Y	Fu 5-A-43	5	Tim 56410H	SF	R	5.71–7.4	Tim 32505H	L4IHV	329	580	a	CD	103	8x3x¼	T
	30 152	2870	126	206	22000	6350	8.25/20	9.00/20	Con 41B	6–4⅛x4⅝	371	5.9	280	100–2500	7–2⅞x13½	Y	Fu 5A43	5	Tim 56411H	SF	R	5.71–6.83	Tim 32505H	L4IHV	370	660	a	CD	53	8x3x¼	T
	31 (T) 153	3025	132	164	.....	6400	8.25/20	9.00/20	Con 41B	6–4⅛x4⅝	371	5.9	280	100–2500	7–2⅞x13½	Y	Fu 5A43	5	Tim 58300H	SF	H	6.14–7.8	Tim 32505H	L4IHV	370	660	a	CD	53	8x3x¼	T
	32 (T) 154	3050	132	164	.....	6300	8.25/20	9.00/20	Con 41B	6–4⅛x4⅝	371	5.9	280	100–2500	7–2⅞x13½	Y	Fu 5A43	5	Eat A617000	SFd	H	Dual Rge.	Tim 32505H	L4IHV	370	660	a	CD	53	8x3x¼	T
	33 (T) 156	3700	132	164	.....	6950	9.00/20	10.00/20	Con 42B	6–4¾x4⅝	405	5.7	305	112–2500	7–2⅞x13½	Y	Fu 5A43	5	Eat A6-20000	SFd	H	Dual Rge.	Tim 32505H	L4IHV	465	768	a	CD	53	8½x3x	T
♦ 34	160X	3295	153	219	25000	7350	9.00/20D	9.75/22	Con 32B	6–4⅛x4½	361	5.4	252	95–2500	7–2⅝x13	Y	Fu 5-A-43	5	Tim 58300H	SF	R	6.14–7.8	Shu 15785P	L4IHV	396	663	a	CD	83	8½x3x	T
♦ 35	162	3380	121	219	25000	7250	9.00/20	10.00/20	Con 41B	6–4⅛x4⅝	371	5.9	280	100–2500	7–2⅞x13½	Y	Fu 5A43	5	Tim 58300H	SF	R	6.14–7.8	Shu 15785B	L4IHV	396	663	a	CD	51	8¼x3x	T
	36 166	4000	121	219	28000	7800	10.00/20	11.00/20	Con 42B	6–4¾x4⅝	405	5.7	305	112–2500	7–2¾x13½	Y	Fu 5A43	5	Wis 1337H	2F	R	5.63–8.59	Shu 15785B	L4IHV	465	772	a	CD	51	8¼x3x	T
♦ 37	170X	3640	153	219	25000	7960	9.00/20D	9.75/22	Con 33B	6–4¼x4⅜	381	4.7	276	106–2600	7–2⅜x13	Y	Fu 5-A-62	5	Tim 72300H	2F	R	5.78–7.35	Shu 15785B	L4IHV	370	663	a	CD	83	8½x3x	T
♦ 38	165X	3795	153	219	28000	8150	9.75/20D	10.50/22	Con 32B	6–4⅛x4½	361	5.4	252	95–2500	7–2⅝x13	Y	Fu 5-A-43	5	Wis 1337BH	2F	R	5.63–8.59	Shu 15785B	L4IHV	465	772	a	CD	83	8¼x3x	T
♦ 39	175X	4290	153	219	30000	8550	9.00/20D	10.50/22	Con 34B	6–4¾x4⅜	427	5.4	322	133–2600	7–2¾x13	Y	Fu 5-A-62	5	Wis 1337BH	2F	R	5.63–8.59	Shu 15785B	L4IHV	465	772	a	CD	83	8¼x3x	T
♦ 40	195X	4230	153	219	28000	8650	9.75/20D	10.50/22	Con 33B	6–4¼x4⅜	381	4.7	276	106–2600	7–2¾x13	Y	Fu 5-A-62	5	Wis 1337BH	2F	R	5.63–8.59	Shu 15785B	L4IHV	465	772	a	CD	83	8¼x3x	T
♦ 41	220X	4930	153	219	34000	9050	10.50/20D	11.25/24	Con 34B	6–4¾x4⅜	427	5.4	322	133–2600	7–2¾x13	Y	Fu 5-A-62	5	Wis 1757H	2F	R	6.06–8.82	Shu 15795B	L4IHV	536	899	a	CD	83	8¼x3x	T
♦ 42	240X	5130	153	219	30000	8590	9.75/20D	10.50/24	Con 35B	6–4½x5¼	501	5.4	370	144–2400	7–2¾x13	Y	Fu 5-A-62	5	Wis 1337BH	2F	R	5.63–7.52	Shu 15785B	L4IHV	465	772	a	CD	83	8¼x3x	T
♦ 43	260X	6030	195	219	34000	9720	10.50/22D	11.25/24	Con 35B	6–4½x5¼	501	5.4	370	144–2400	7–2¾x13	Y	Fu MHU	4	Wis 1757H	2F	R	6.06–8.82	Shu 15795B	L4IHV	536	899	a	CD	125	8¼x3x	T
	44 260S	6380	195	219	36000	10000	10.50/24D	11.25/24	Con 35B	6–4½x5¼	501	5.4	370	144–2400	7–2¾x13	Y	Fu MHU	4	Wis 1757H	2F	R	6.06–8.82	Shu 15795B	Lw41D V	600	899	a	CD	125	8¼x3x	B
♦ 45	Chevrolet AK	478	115	115	4460	**	6.00/16S	15/6S	Own	6–3½x3¾	216	6.5	174	90–3300	4–2¾x5	N	Own	3	Own	Hy	U	4.11	Own	O4IH	158	242	a	2I	38¼	5¾x2¼x	C
♦ 46	AJ	**	115	115	5060	**	6.00/16S	15/6S	Own	6–3½x3¾	216	6.5	174	90–3300	4–2¾x5	N	Own	3	Own	Hy	U	4.55	Own	O4IH	158	242	a	2I	38¼	5¾x2¼x	C
♦ 47	AL	556	125	125	5200	**	15/6S	15/6S	Own	6–3½x3¾	216	6.5	174	90–3300	4–2¾x5	N	Own	3	Own	Hy	H	4.55	Own	O4IH	158	242	a	2I	43½	5¾x2¼x	C
♦ 48	AN	* 848	134	134	5800	**	7.00/17S	7.50/17-8S	Own	6–3½x3¾	216	6.5	174	90–3300	4–2¾x5	N	Own	3	Own	Hy	H	4.55	Own	O4IH	194	297	a	2I	57½	7x2¾x	C
♦ 49	YR	591	134	134	6700	**	6.00/20S	7.50/20-8p	Own	6–3½x3¾	216	6.5	174	90–3300	4–2¾x5	N	Own	4	Own	HyF	H	5.43	Own	O4IH	330	478	a	2I	57¾	7x2¾x	C
♦ 50	YR	613	134	134	7700	**	6.00/20S†	7.50/20-8S	Own	6–3½x3¾	216	6.5	174	90–3300	4–2¾x5	N	Own	4	Own	HyF	H	5.43	Own	O4IH	330	478	a	2I	57¾	7x2¾x	C
♦ 51	YR	623	134	134	9500	**	6.00/20D	7.50/20-8p	Own	6–3½x3¾	216	6.5	174	90–3300	4–2¾x5	N	Own	4	Own	HyF	H	6.17	Own	O4IH	330	478	a	2I	57¾	7x2¾x	C
♦ 52	YR	754	134	134	●13500	**	6.50/20D‡	7.50/20-8p	Own	6–3½x3¾	216	6.5	174	90–3300	4–2¾x5	N	Own	4	Own	HyF	H	6.17	Own	O4IH	330	478	a	2I	57¾	7x2¾x	C
♦ 53	YS	639	160	160	7700	**	6.00/20S†	7.50/20-8S	Own	6–3½x3¾	216	6.5	174	90–3300	4–2¾x5	N	Own	4	Own	HyF	H	5.43	Own	O4IH	330	478	a	2I	83¼	7x2¾x	C
♦ 54	YS	649	160	160	9500	**	6.00/20D	7.50/20-8p	Own	6–3½x3¾	216	6.5	174	90–3300	4–2¾x5	N	Own	4	Own	HyF	H	6.17	Own	O4IH	330	478	a	2I	83¼	7x2¾x	C
♦ 55	YS	780	160	160	●13500	**	6.50/20D‡	7.50/20-8p	Own	6–3½x3¾	216	6.5	174	90–3300	4–2¾x5	N	Own	4	Own	HyF	H	6.17	Own	O4IH	330	478	a	2I	83¼	7x2¾x	C
♦ 56	(c.o.e.) YU	731	109	109	7700	**	6.00/20D†	7.50/20-8S	Own	6–3½x3¾	216	6.5	174	90–3300	4–2¾x5	N	Own	4	Own	HyF	H	5.43	Own	O4IH	330	478	a	2I	67½	7x2¾x	C
♦ 57	(c.o.e.) YU	741	109	109	9500	**	6.00/20D	7.50/20-8p	Own	6–3½x3¾	216	6.5	174	90–3300	4–2¾x5	N	Own	4	Own	HyF	H	6.17	Own	O4IH	330	478	a	2I	67½	7x2¾x	C
♦ 58	(c.o.e.) YU	872	109	109	●13500	**	6.50/20D‡	7.50/20-8p	Own	6–3½x3¾	216	6.5	174	90–3300	4–2¾x5	N	Own	4	Own	HyF	H	6.17	Own	O4IH	330	478	a	2I	67½	7x2¾x	C
♦ 59	(c.o.e.) YV	756	132	132	7700	**	6.00/20S†	7.50/20-8S	Own	6–3½x3¾	216	6.5	174	90–3300	4–2¾x5	N	Own	4	Own	HyF	H	5.43	Own	O4IH	330	478	a	2I	86	7x2¾x	C
♦ 60	(c.o.e.) YV	766	132	132	9500	**	6.00/20D	7.50/20-8p	Own	6–3½x3¾	216	6.5	174	90–3300	4–2¾x5	N	Own	4	Own	HyF	H	6.17	Own	O4IH	330	478	a	2I	86	7x2¾x	C
♦ 61	(c.o.e.) YV	897	132	132	●13500	**	6.50/20D‡	7.50/20-8S	Own	6–3½x3¾	216	6.5	174	90–3300	4–2¾x5	N	Own	4	Own	HyF	H	6.17	Own	O4IH	330	478	a	2I	86	7x2¾x	C
♦ 62	(c.o.e.) YW	782	158	158	7700	**	6.00/20S†	7.50/20-8S	Own	6–3½x3¾	216	6.5	174	90–3300	4–2¾x5	N	Own	4	Own	HyF	H	5.43	Own	O4IH	330	478	a	2I	111½	7x2¾x	C
♦ 63	(c.o.e.) YW	792	158	158	9500	**	6.00/20D	7.50/20-8p	Own	6–3½x3¾	216	6.5	174	90–3300	4–2¾x5	N	Own	4	Own	HyF	H	6.17	Own	O4IH	330	478	a	2I	111½	7x2¾x	C
♦ 64	(c.o.e.) YW	923	158	158	●13500	**	6.50/20D‡	7.50/20-8p	Own	6–3½x3¾	216	6.5	174	90–3300	4–2¾x5	Y	Own	4	Own	HyF	H	6.17	Own	O4IH	330	478	a	2I	111½	7x2¾x	C
	65 Condor DZA-1	1592	131	155	10000	3200	6.00/20S	32x6–8p	W-HES XBKH	4–3¾x4¾	210	6.2	125	41–2200	3–2¼x5½	Y	WG T9	4	Cla R650	SF	H	4.62–6.16	Cla F182	L4IH	212	352	a	TX	60½	7x2¾x	T
	66 (5) DZB-1	1628	131	227	12000	3500	6.00/20S	32x6–8p	W-HES XBKH	4–3¾x4¾	210	6.2	125	41–2200	3–2¼x5½	Y	WG T9	4	Cla R750	SF	H	5.1–6.83	Cla F266	L4IH	233	392	a	TX	60½	7¼x2¾x¼	T
	67 (5) DZC-1	1698	131	227	14000	3900	6.00/20S	8.25/20	W-HES XBKH	4–3¾x4¾	210	6.2	125	41–2200	3–2¼x5½	Y	WG T9	4	Tim 53300	SF	H	4.57–6.6	Tim 30000H	L4IH	238	402	a	TX	60½	7¼x2¾x¼	T
	68 (5) DZD-1	1866	131	227	15000	4500	6.00/20S	8.25/20	W-HES XBKH	4–3¾x4¾	210	6.2	125	41–2200	3–2¼x5½	Y	WG T9A	4	Tim 54411	SF	H	4.12–6.8	Tim 30000H	L4IH	331	528	a	TX	60½	7¼x2¾x¼	T
	69 (5) DZE-1	2015	131	227	14000	4100	6.00/20S	8.25/20	W-HES 6BKH	6–3¾x4¼	282	6.4	174	84–2800	7–2⅝x10¼	Y	Cla 185F	4	Tim 53300	SF	H	4.57–6.2	Tim 30000H	L4IH	238	402	a	TX	60½	7¼x2¾x¼	T
	70 (5) DZF-1	2327	131	227	15000	4900	6.50/20D	8.25/20	W-HES 6BKH	6–3¾x4¼	282	6.4	174	84–2800	7–2⅝x10¼	Y	Cla 185F	4	Tim 54411	SF	H	4.12–6.8	Tim 31000H	L4IHV	338	578	a	TX	60½	10x2¾x	P
	71 (5) DZG-1	2572	131	227	17000	5400	7.00/20D	9.00/20	W-HES 6BKH	6–3¾x4¼	282	6.4	174	84–2800	7–2⅝x10¼	Y	Cla 200V	5	Tim 55411	SF	H	5.71–7.4	Tim 31000H	L4IHV	338	578	a	TX	60½	10x2¾x	P
	72 (5) DZH-1	2723	131	227	19000	5600	7.00/20D	9.75/20	W-HES 6BKH	6–3¾x4¼	282	6.4	174	84–2800	7–2⅝x10¼	Y	Cla 200V	5	Tim 56411	SF	H	4.44–7.4	Tim 32500H	L4IHV	338	578	a	TX	60½	10x2¾x	P
	73 (5) DZJ-1	2964	131	227	21500	5900	7.50/20D	10.50/20	W-HES 6BKH	6–3¾x4¼	282	6.4	174	84–2800	7–2⅝x10¼	Y	Cla 200V	5	Tim 58300	SF	H	5.25–7.8	Tim 33000H	L4IHV	384	660	a	TX	60½	10x2¾x	P
	74 Corbitt 13B	1500	159	179	14500	4800	7.50/20D	8.25/20	Con A6244	6–3⅞x4⅛	244	5.4	170	83–3200	4–2⅝x6⅜	N	Cla B116C	4	Tim 54411H	SF	H	5.83–6.80	Tim 30020H	L4IH	310	528	A	TX	79	7⅞x3½x	T
	75 17B	2400	166	Op	18500	5700	8.25/20D	9.00/22	Con M6290	6–3¾x4⅛	290	5.5	206	87–2800	7–2⅝x12	N	Fu 5A330	5	Tim 56411H	SF	H	6.06–7.40	Tim 33000H	L4IHV	351	660	A	TX	81	8x3½x¼	T
	76 21B	3250	167	Op	22500	7750	9.00/20D	10.50/22	Con E-602	6–4¼x4½	361	5.4	252	95–2500	7–2⅝x13	N	Fu 5A430	5	Tim 58300H	SF	H	5.57–7.80	Tim 35000H	L4IHV	500	768	A	TX	82	8x3½x¼	T

† Rear 7.00/20 8-ply single. ‡ Rear 7.50/20 8-ply dual. ● 14,000 lb. when truck is equipped with two-speed rear axle and 8.25/20 10-ply tires. *Includes special panel body. ** Data not available for this issue.

♦ Denotes new models or change in specifications.

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Line Number	MAKE AND MODEL	Chassis List Price	WHEEL-BASE Minimum Standard	WHEEL-BASE Maximum Standard	Gross Vehicle Weight for Normal Service	Chassis Weight (See definition)	TIRE SIZES D-dual rear S-single rear: Standard Front and Rear	TIRE SIZES: Maximum Authorized Tire Size (Duals unless noted)	ENGINE DETAILS: Make and Model	No. of Cylinders, Bore and Stroke	Displacement	Comp. Ratio	Torque lb. ft.	Max. Brake H.P. at R.P.M. Given	Main Bearings: Number, Diameter and Length	Governor Standard	TRANSMISSION: Make and Model	TRANSMISSION: Forward Sp'ds	REAR AXLE: Make and Model	REAR AXLE: Gear and Type	REAR AXLE: Drive & Torque	REAR AXLE: Gear Ratio Range in High	FRONT AXLE: Make and Model	BRAKES SERVICE: Make Location Type Operat'n	BRAKES SERVICE: Lining Area	BRAKES SERVICE: Drum Area	BRAKES SERVICE: Drum Material	BRAKES: Hand Location Type	C-A Dimension (Min. Std. W. B.)	FRAME: Side Rail Dimensions	FRAME: Type
	Federal (•) Cont.																															
♦ 1	(6)....35	2395	140	255	22500	6700	8.25/20D	9.75/20	Wau 6MKRF	6-4½x4¾	381	5.0	270	90-2400	7-[illegible]x12½	Y	Cla 205V	5	Tim 56411H	SF	H	6.16-7.40	Tim 32515H	L4IHV	415	735	a	TX	57	10⅛x3⅛x⅜	T
2	(6)....45	2950	140	255	24000	7300	9.00/20D	10.50/24	Wau 6MKRF	6-4½x4¾	381	5.0	270	90-2400	7-2⅝x12½	Y	Cla 270V	5	Tim 58301H	SF	H	5.57-7.80	Tim 33006H	L4IHV	504	844	a	TX	57	10⅛x3⅛x⅜	T
3	(6)....55	3525a	140	255	28000	8000	9.00/20D	10.50/24	Wau 6MZRF	6-4½x4¾	404	5.4	288	106-2500	7-2⅝x12½	Y	Cla 270V	5	Tim 7574 3H	SF	H	6.85-9.41	Tim 35011H	L4IHV	504	844	a	PD	57	10⅛x3⅛x⅜	T
♦ 4	(6)....55H	4005	140	255	30000	8400	9.75/20D	10.50/24	Wau 6MZRF	6-4¼x4¼	404	5.4	288	106-2500	7-2⅝x12½	Y	Cla 270V	5	Tim 76796H	2F	R	7.34-9.20	Tim 35011H	L4IHV	504	844	a	PD	57	10⅛x3⅛x⅜	T
♦ 5	(7a)....62	5675	141	211	35000	10400	10.50/20D	11.25/24	Con 22RF	6-4½x5¼	501	5.2	400	150-2300	7-2¾x14⅛	Y	Cla 326VO	5	Tim 76746W	2F	R	7.34-9.20	Tim36000TW	Ws4IA	620	921	a	TD	57	10⅛x3⅛x⅜	TF
♦ 6	63	5675	141	211	35000	10250	10.50/20D	11.25/24	Wau 6SRKRF	6-4⅝x5½	517	5.5	369	126-2300	7-3x13⅞	Y	Cla 326VO	5	Tim 76746W	2F	R	7.34-9.20	Tim36000TW	Ws4IA	620	921	a	TD	57	10⅛x3⅛x⅜	TF
♦ 7	65	6425	141	211	40000	11300	10.50/24D	11.25/24	Con 22RF	6-4½x5¼	501	5.2	400	150-2300	7-2¾x14⅛	Y	Cla 326VO	5	Tim 79733W	2F	R	8.59-10.11	Tim36000TW	Ws4IA	724	1051	a	TD	57	10⅛x3⅛x⅜	TF
♦ 8	66	6425	141	211	40000	11150	10.50/24D	11.25/24	Wau 6SRKRF	6-4⅝x5½	517	5.5	369	126-2300	7-3x13⅞	Y	Cla 326VO	5	Tim 79733W	2F	R	8.59-10.11	Tim36000TW	Ws4IA	724	1051	a	TD	57	10⅛x3⅛x⅜	TF
♦ 9	.....(c.o.e.) 76	795	104	215	13000	4000	6.00/20S	7.50/20	Her JXFF	6-3⅜x4¼	232	6.1	164	75-3000	7-2½x10⅜	N	WG T9	4	Tim 53547H	SF	H	5.14-6.66	Tim 31100H	L4IH	299	478	a	TX	60	8¼x2⅛x¼	T
10	.....(c.o.e.) 77	895	104	215	14000	4280	6.00/20S	8.25/20	Her JXGF	6-3½x4¼	245	5.7	174	79-3000	7-2½x10⅜	Y	WG T9	4	Tim 53308H	SF	H	5.14-6.66	Tim 31100H	L4IH	299	478	a	TX	60	8¼x2⅛x¼	T
11	(6)....(c.o.e.) 80	1260	104	215	17500	4900	6.50/20D	9.00/20	Her JXBF	6-3⅜x4¼	263	6.1	187	82-3000	7-2½x10⅜	Y	WG T9	4	Tim 54411H	SF	H	5.83-6.80	Tim 31102H	L4IHV	330	578	a	TX	60	8¼x2⅛x¼	T
12	(6-6a) (c.o.e.)..85	1565	104	215	19000	5600	7.00/20D	9.00/20	Her JXCF	6-3¾x4¼	282	6.1	208	85-2900	7-2½x10⅜	Y	Cla 185F	4	Tim 55411H	SF	H	5.71-7.40	Tim 32515H	L4IHV	374	654	a	TX	60	8¼x2⅛x¼	T
13	(6)....(c.o.e.) 89	1945	104	215	20000	5720	7.50/20D	9.75/20	Her JXDF	6-4x4¼	320	5.9	244	95-2800	7-2½x10⅜	Y	Cla 205V	5	Tim 56411H	SF	H	6.16-7.40	Tim 32515H	L4IHV	415	735	a	TX	60	8¼x2⅛x¼	T
14	(6-7)(c.o.e.) 89H	2175	104	215	22500	6050	8.25/20D	9.75/20	Her JXDF	6-4x4¼	320	5.9	244	95-2800	7-2½x10⅜	Y	Cla 205V	5	Tim 58301H	SF	H	6.83-7.80	Tim 32515H	L4IHV	504	844	a	TX	60	8¼x2⅛x¼	T
♦ 15	.....(c.o.e.) 90	2560	116	173	22500	6600	8.25/20D	9.75/20	Her WXC3	6-4¼x4½	383	5.9	285	107-2800	7-2⅝x13¼	Y	Cla 205V	5	Tim 56411H	SF	H	6.16-7.40	Tim 35000H	L4IHV	415	735	a	TX	72	10⅛x3⅛x⅜	T
♦ 16	.....(c.o.e.) 92	3095	116	173	24000	7200	9.00/20D	10.50/24	Her WXLC3	6-4¼x4¾	404	6.3	307	123-2800	7-2⅝x13¼	Y	Cla 270V	5	Tim 58301H	SF	H	5.57-7.80	Tim 35000H	L4IHV	504	844	a	TX	72	10⅛x3⅛x⅜	T
♦ 17	.....(c.o.e.) 94	3645	116	173	28000	7900	9.00/20D	10.50/24	Her WXLC3	6-4¼x4¾	404	6.3	307	123-2800	7-2⅝x13¼	Y	Cla 270V	5	Tim 75743H	2F	R	6.85-9.41	Tim 35000H	L4IHV	504	844	a	PD	72	10⅛x3⅛x⅜	T
♦ 18	.....(c.o.e.) 94H	4125	116	173	30000	8300	9.75/20D	10.50/24	Her WXLC3	6-4¼x4¾	404	6.3	307	123-2800	7-2⅝x13¼	Y	Cla 270V	5	Tim 76796H	2F	R	7.34-9.41	Tim 35000H	L4IHV	504	844	a	PD	72	10⅛x3⅛x⅜	T
♦ 19	Ford Reg...11T-81 **	695	134	134	.....	3138	6.00/20*8	7.50/18-10	Own	8-3⅛x3¾	221	...	150	85-3800	3-2.5x4.71	N	Own O1T	4	Own	FS	H	5.14-6.67	Own	O4IH	303	506	A	TX	60.21	7x2.75x.21	CTf
♦ 20	...Reg...19T-81 **	720	134	134	.....	3138	6.00/20*8	7.50/18-10	Own	8-3⅛x3¾	239	...	176	95-3600	3-2.5x4.71	N	Own O1T	4	Own	FS	H	5.14-6.67	Own	O4IH	303	506	A	TX	60.21	7x2.75x.21	CTf
♦ 21	...Reg..118T-81 **	720	158	158	.....	3197	6.00/20*8	7.50/18-10	Own	8-3⅛x3¾	221	...	150	85-3800	3-2.5x4.71	N	Own O1T	4	Own	FS	H	5.14-6.67	Own	O4IH	303	506	A	TX	84.21	7x2.75x.21	CTf
♦ 22	...Reg..198T-81 **	745	158	158	.....	3197	6.00/20*8	7.50/18-10	Own	8-3⅛x3¾	239	...	176	95-3600	3-2.5x4.71	N	Own O1T	4	Own	FS	H	5.14-6.67	Own	O4IH	303	506	A	TX	84.21	7x2.75x.21	CTf
♦ 23	.(c.o.e.) 111W-81 **	840	101	101	.....	*3547	6.00/20*8	7.50/18-10	Own	8-3⅛x3¾	221	...	150	85-3800	3-2.5x4.71	N	Own O1T	4	Own	FS	H	5.14-6.67	Own	O4IH	303	506	A	TX	59.7	7x2.75x.21	CTf
♦ 24	.(c.o.e.) 191W-81 **	865	101	101	.....	*3547	6.00/20*8	7.50/18-10	Own	8-3⅛x3¾	239	...	176	95-3600	3-2.5x4.71	N	Own O1T	4	Own	FS	H	5.14-6.67	Own	O4IH	303	506	A	TX	59.7	7x2.75x.21	CTf
♦ 25	.(c.o.e.) 11W-81 **	860	134	134	.....	*3624	6.00/20*8	7.50/18-10	Own	8-3⅛x3¾	221	...	150	85-3800	3-2.5x4.71	N	Own O1T	4	Own	FS	H	5.14-6.67	Own	O4IH	303	506	A	TX	92.7	7x2.75x.21	CTf
♦ 26	.(c.o.e.) 19W-81 **	885	134	134	.....	*3624	6.00/20*8	7.50/18-10	Own	8-3⅛x3¾	239	...	176	95-3600	3-2.5x4.71	N	Own O1T	4	Own	FS	H	5.14-6.67	Own	O4IH	303	506	A	TX	92.7	7x2.75x.21	CTf
♦ 27	.(c.o.e.) 118W-81 **	885	158	158	.....	*3701	6.00/20*8	7.50/18-10	Own	8-3⅛x3¾	221	...	150	85-3800	3-2.5x4.71	N	Own O1T	4	Own	FS	H	5.14-6.67	Own	O4IH	303	506	A	TX	116.7	7x2.75x.21	CTf
♦ 28	.(c.o.e.) 198W-81 **	910	158	158	.....	*3701	6.00/20*8	7.50/18-10	Own	8-3⅛x3¾	239	...	176	95-3600	3-2.5x4.71	N	Own O1T	4	Own	FS	H	5.14-6.67	Own	O4IH	303	506	A	TX	116.7	7x2.75x.21	CTf
♦ 29	1 Tonner 11Y-83 **	745	122	122	.....	2635	6.00/17*8	7.50/17	Own	8-3⅛x3¾	221	...	150	85-3800	3-2.5x4.71	N	Own 11Y	3	Own	FS	H	4.86-	Own	O4IH	187	308	A	21	48.21	6x2.25x.19	CTf
♦ 30	1 Tonner 1NY-83 **	725	122	122	.....	2429	6.00/17*8	7.50/17	Own	4-3x3½	120	...	85	30-2800	3-2.25x4.86	N	Own ONY	4	Own	FS	H	-6.67	Own	O4IH	187	308	A	21	48.21	6x2.25x.19	CTf
♦ 31	½ Tonner 11D-83 **	710	122	122	.....	2375	6.50/16*8	7.00/16	Own	8-3⅛x3¾	221	...	150	85-3800	3-2.5x4.71	N	Own 11Y	3	Own	FS	H	4.86-	Own	O4IH	162	264	A	21	48.21	6x2.25x.19	CTf
♦ 32	½ Tonner 1ND-83 **	690	122	122	.....	2205	6.50/16*8	7.00/16	Own	4-3x3¼	120	...	85	30-2800	3-2.25x4.86	N	Own ONY	4	Own	FS	H	-6.67	Own	O4IH	162	264	A	21	48.21	6x2.25x.19	CTf
33	Com. Car 11C-83 **	605	112	112	.....	2075	6.00/16S	6.50/16	Own	8-3⅛x3¾	221	...	150	85-3800	3-2.5x4.71	N	Own O1C	3	Own	S¼	U	3.78-4.11	Own	O4IH	162	264	A	21	38.16	5.5x2x.11	TIX
♦ 34	Com. Car 1NC-83 **	585	112	112	.....	1905	6.00/16S	6.50/16	Own	4-3x3¼	120	...	85	30-2800	3-2.25x4.86	N	Own INC	3	Own	S¼	U	4.55-	Own	O4IH	162	264	A	21	38.16	5.5x2x.11	TIX
35	Gramm 11A	695	131	155	6500	2850	7.00/16S	7.50/16S	Her QXB3G	6-3¼x4½	205	5.8	144	66-3500	7-2½x10⅛	N	WG T*3	3	Spi 51-1	SF	H	**-5.10	Spi 50-1	L4IH	218	328	a	TX	60½	7x2¾x⅜	T
36	(9)....21A	745	131	155	10000	3000	6.00/20S	32x6-8p	Her QXB3G	6-3¼x4½	205	5.8	144	66-3500	7-2½x10⅛	N	WG T9	4	Cla R650	SF	H	4.62-6.17	Cla F182	L4IH	212	352	a	TX	60½	7x2¾x⅜	T
37	(9)....31A	825	131	227	12000	3300	6.00/20S	32x6-8p	Her QXC3G	6-3⅜x4½	221	5.9	154	67-3000	7-2½x10⅛	N	WG T9	4	Cla R750	SF	H	5.10-6.83	Cla F266	L4IH	233	392	a	TX	60½	7½x2¾x¾	T
38	(9)....41A	885	131	227	14000	3750	6.00/20S	8.25/20	Her QXC3G	6-3⅜x4½	221	5.9	154	67-3000	7-2½x10⅛	N	WG T9	4	Tim 53300	SF	H	4.57-6.60	Tim 30000H	L4IH	252	402	a	TX	60½	7½x2¾x¾	T
39	(9)....46A	1095	131	227	14000	3900	6.00/20S	8.25/20	Her JXBG	6-3⅜x4¼	263	6.1	187	82-3000	7-2½x10⅜	N	WG T9A	4	Tim 53300	SF	H	4.57-6.20	Tim 30000H	L4IH	252	402	a	TX	60½	7½x2¾x¾	T
40	(9)....56A	1295	131	227	15000	4700	6.50/20D	8.25/20	Her JXBG	6-3⅜x4¼	263	6.1	187	82-3000	7-2½x10⅜	N	WG T9A	4	Tim 54411	SF	H	4.12-6.80	Tim 31000H	L4IHV	334	578	a	TX	60½	10x2¾x⅛	P
41	(9)....71A	1595	131	227	17000	5200	7.00/20D	9.00/20	Her JXCG	6-3¾x4¼	282	5.9	208	85-2900	7-2½x10⅜	N	Cla 200V	5	Tim 55411	SF	H	5.71-7.40	Tim 31000H	L4IHV	334	578	a	TX	60½	10x2¾x⅛	P
42	(9)....76A	1895	131	227	19000	5400	7.00/20D	9.75/20	Her JXDG	6-4x4¼	320	5.9	244	95-2800	7-2½x10⅜	N	Cla 200V	5	Tim 56411	SF	H	4.44-7.40	Tim 32500H	L4IHV	334	578	a	TX	60½	10x2¾x⅛	P
43	(9)....86A	2195	131	227	21500	5700	7.50/20D	10.50/20	Her JXDG	6-4x4¼	320	5.9	244	95-2800	7-2½x10⅜	N	Cla 200V	5	Tim 58300	SF	H	5.25-7.80	Tim 33000H	L4IHV	380	660	a	TX	60½	10x2¾x⅛	P
44	(9)....96A	3395	131	227	28000	8000	9.00/20D	10.50/20	Her WXLC3	6-4¼x4¾	404	5.9	294	118-2800	7-2⅝x10⅜	Y	Cla 270V	5	Wis 1337H	2F	H	5.63-8.59	Tim 35000H	L4IHV	474	768	a	TX	60½	12x2¾x⅛	P
45	(D) (9)....D46A	2420	131	227	14000	4100	6.00/20S	8.25/20	Her DJXB	6-3½x4½	260	14.	178	77-2600	7-3x10⅜	Y	Cla 185F	4	Tim 53300	SF	H	4.57-5.66	Tim 30000H	L4IH	252	402	a	TX	60½	7½x2¾x¾	T
46	(D) (9)....D56A	2620	131	227	15000	4900	6.50/20D	8.25/20	Her DJXB	6-3½x4½	260	14.	178	77-2600	7-3x10⅜	Y	Cla 185F	4	Tim 54411	SF	H	4.12-6.80	Tim 31000H	L4IHV	334	578	a	TX	60½	10x2¾x⅛	P
47	(D) (9)....D71A	2875	131	227	17000	5400	7.00/20D	9.00/20	Her DJXC	6-3¾x4½	298	14.	194	84-2600	7-3x10⅜	Y	Cla 200V	5	Tim 55411	SF	H	5.71-7.40	Tim 31000H	L4IHV	334	578	a	TX	60½	10x2¾x⅛	P
48	(D) (9)....D76A	3245	131	227	19000	5700	7.00/20D	9.75/20	Bud 6DT31	6-3⅜x5½	389	14.	224	90-2300	7-3x9¾	Y	Cla 200V	5	Tim 56411	SF	H	4.44-7.40	Tim 32500H	L4IHV	334	578	a	TX	60½	10x2¾x⅛	P
49	(D) (9)....DS6A	4230	131	227	21500	6000	7.50/20D	10.50/20	Bud 6DT38	6-3⅞x5½	389	14.	284	96-2100	7-3x12½	Y	Cla 270V	5	Tim 58300	SF	H	5.25-6.83	Tim 33000H	L4IHV	380	660	a	TX	60½	10x2¾x⅛	P
50	(D) (9)....D96A	5075	131	227	28000	8100	9.00/20D	10.50/20	Bud 6DT38	6-3⅞x5½	389	14.	284	96-2100	7-3x12½	Y	Cla 270V	5	Wis 1337H	2F	H	5.63-8.59	Tim 35000H	L4IHV	474	768	a	TX	60½	12x2¾x⅛	P
51	.....GF	5500	150	225	24000	9050	9.75/20D	10.50/20	Her HXC	6-5¼x6	779	4.5	505	143-1600	7-3½x17	N	BL 744	4	Wis 1337H	2F	H	4.29*7.2	Tim 33000	L4IHV	474	768	a	TD	67	12x2½x¼	TP
52	Hug.....87W	3550	134	134	26000	8190	9.00/20D	9.75/20	Wau 6MZR	6-4¼x4¾	404	5.3	286	95-2200	7-2⅝x12½	Y	Fu 5A43	5	Wis 1337BM	2F	T	**-8.59	Shu 625	W2MV	331	531	a	TD	84	8x4¼x⅜	I
53	.....92U	5250	134	134	33500	9500	11.25/20D	12.00/24	Wau6SRKR	6-4½x5½	517	4.5	365	125-2200	7-3x13¾	Y	Fu 5A62	5	Wis 1910	2F	T	8.88-10.0	Shu 655	W2MV	360	540	a	TD	84	8x4¼x⅜	I
54	.....(D) 92U	6500	134	134	33900	9915	11.25/20D	12.00/24	Cum HB4	4-4⅞x6	448	17	370	100-1800	5-4½x11½	Y	Fu 5A62	5	Wis 1910	2F	T	8.88-10.0	Shu 655	W2MV	360	540	a	TD	84	8x4¼x⅜	I
55	.....92H	6150	134	134	36606	11152	11.25/20D	11.25/24	Wau6SRKR	6-4½x5½	517	4.5	365	125-2200	7-3x13¾	Y	Fu 5A62	5	Tim 79740	2F	T	10.12-1	Shu 655	2IMV	360	628	A	P	85	8x4.07x.34	I
56	98	7450	144	144	48500	11920	12.00/24D	12.00/24	Wau 6GAL	6-5x5½	648	4.6	468	132-1800	7-4x18⅜	Y	Fu 8A86	8	Tim 79740	2F	T	7.9-10.12	Shu 1673	W4IA	727	1138	a	TD	86½	9x4¼x⅜	I
57	.....(D) D98	8425	144	144	48500	11920	12.00/24D	12.00/24	Cum HB6	6-4½x6	672	17	500	150-1800	7-4½x16½	Y	Fu 8A86	8	Tim 79740	2F	T	7.9-10.12	Shu 1673	W4IA	727	1138	a	TD	86½	9x4¼x⅜	I
	International (11)																															
♦ 58	.....D-2	475	113	113	4400	2240	6.00/16S	7.00/15S	Own HD213	6-3⅜x4½	213	6.3	155	78-3400	4-2⅝x6	N	Own HDS	3	Own R1000	S½	H	3.72-4.18	Own F12	B4IH	191	264	c	2I	39	6x2¼x⅛	T
♦ 59	.....D-2-M	1115	102	113	4600	1995	6.00/16S	7.00/15S	Ow HD213B	6-3⅜x4½	213	6.3	155	78-3400	4-2⅝x6	N	Ow S-HDS	3	Own R1001	S½	H	4.18**	Own F102	B4IH	191	264	c	PX		6½x2¼x⅛	T
♦ 60	.....D-3	515	125	125	5200	2290	6.00/16S	7.00/15S	Own HD213	6-3⅜x4½	213	6.3	155	78-3400	4-2⅝x6	N	Own HDS	3	Own R1000	S½	H	3.72-4.18	Own F12	B4IH	191	264	c	2I	51	6x2¼x⅛	T
♦ 61	.....D-5	490	113	125	4400	2120	6.00/16S	7.00/15S	Wau FC132	4-3¼x4	132	6.0	89	33-2800	3-2½x4½	N	Own HDS	3	Own R1000	S½	H	4.18-5.11	Own F12	B4IH	191	264	c	2I	39	6-2¼x⅛	T
♦ 62	.....D-15-H	605	113	130	6650	2720	7.00/16S	6.00/20	Ow HD213A	6-3⅜x4½	213	6.3	155	78-3400	4-2⅝x6	N	Own HDS	3	Own R1101	SF	H	4.875-6.5	Own F100	B4IH	216	308	c	2I	39	6½x2¼x⅛	T
♦ 63	.....D-15-M	1255	102	113	7000	2275	7.00/16S	7.00/20S	Ow HD213B	6-3⅜x4½	213	6.3	155	78-3400	4-2⅝x6	N	Ow SH41A	4	Own R1101	SF	H	4.875-6.5	Own F200	B4IH	216	308	c	PX		6½x2¼x⅛	T
♦ 64	.....D-30	650	128	173	13200	3410	30x5*8	8.25/20	Own HD232	6-3⅞x4½	232	6.0	170	81-3200	4-2⅝x6	N	Own H41A	4	Own R1310	SF	H	5.29-6.66	Own F302	B4IH	293	412	c	PX	57	8x2½x⅜	T
♦ 65	.....DS-30	765	128	173	13300	3510	30x5*8	8.25/20	Own HD232	6-3⅞x4½	232	6.0	170	81-3200	4-2⅝x6	N	Own H41A	4	Owa R2320	d SF	H	5.14-8.81	Own F302	B4IH	293	412	c	PX	57	8x2½x⅜	T
♦ 66	.....D-35	970	137	179	14600	4035	6.50/20D	8.25/20	Ow FAB241	6-3⅝x4½	241	5.8	175	84-3200	4-2⅝x5	N	Own H41A	4	Own R1300	SF	H	5.63-7.16	Own F301	B4IHV	293	412	c	PX	60	8¼x3x⅜	T
♦ 67	.....DS-35	1085	137	179	14600	4035	6.50/20D	8.25/20	Ow FAB241	6-3⅝x4½	241	5.8	175	84-3200	4-2⅝x5	N	Own H41A	4	Own R2300	d SF	H	5.14-8.81	Own F301	B4IHV	293	412	c	PX	60	8¼x3x⅜	T
♦ 68	.....D-40	1365	134	176	16200	4705	7.00/20D	9.00/20	Ow FAB259	6-3½x4½	259	5.7	192	89-3200	4-2⅝x5	N	Own F51	5	Own R1400	SF	H	5.63-7.16	Own F400	B4IHV	341	478	c	PX	60	8¼x3x⅜	T
♦ 69	.....DS-40	1550	134	176	16325	4830	7.00/20D	9.00/20	Ow FAB259	6-3½x4½	259	5.7	192	89-3200	4-2⅝x5	N	Own F51C	5	Own R2410	d SF	H	5.63-8.52	Own F400	B4IHV	341	478	c	PX	60	8¼x3x⅜	T
♦ 70	.....D-50	1975	137	179	18800	6115	7.50/20D	9.75/20	Ow FBB318	6-3⅞x4½	318	5.4	241	100-2800	7-2¼x11¾	N	Own F51	5	Own R1500	SF	H	5.62-7.16	Own F500	B4IHV	368	532	c	PX	60	8¼x3½x⅜	T
♦ 71	.....DS-50	2185	137	179	18800	6115	7.50/20D	9.75/20	Cum HB400	4-4⅜x6	448	17	330	100-1800	5-4½x11½	Y	Own F52	5	Own R1500	SF	H	5.62-7.16	Own F500	B4IHV	368	532	c	PX	60	8¼x3½x⅜	T
♦ 72	.....DR-50	2140	137	179	18935	6250	7.50/20D	9.75/20	Ow FBB318	6-3⅞x4½	318	5.3	241	100-2800	7-2¼x11¾	Y	Own F51	5	Own R1550	2 SF	H	7.10-8.50	Own F500	B4IHV	368	532	c	PX	60	8¼x3½x⅜	T
♦ 73	▲(D)DD-50	3325	137	179	18935	7105	7.50/20D	9.75/20	Cum HB400	4-4⅜x6	448	17	330	100-1800	5-4½x11½	Y	Own F52	5	Own R1500	SF	H	5.62-7.16	Own F500	B4IHV	268	532	c	PX	72	9¼x3½x⅜	T
♦ 74	.....D-60	2795	149	197	22500	7090	9.00/20D	10.50/20	Ow FBB361	6-4⅛x4½	361	5.2	268	111-2700	7-2¼x11¾	Y	Own F52	5	Own R1600	SF	H	5.62-6.43*	Own F600	B4IHV	469	679	c	PX	72	9¼x3½x⅜	T
♦ 75	.....DR-60	2945	149	197	22500	7090	9.00/20D	10.50/20	Ow FBB361	6-4⅛x4½	361	5.2	268	111-2700	7-2¼x11¾	Y	Own F52	5	Own R1661	2 SF	H	7.10-9.03	Own F600	B4IHV	469	679	c	PX	72	9¼x3½x⅜	T
♦ 76	▲(D)DD-60	4095	149	197	22500	7945	9.00/20D	10.50/20	Cum HB400	4-4⅞x6	448	17	330	100-1800	5-4½x11½	Y	Own F52	5	Own R1600	SF	H	5.62-6.43*	Own F600	B4IHV	469	679	c	PX	72	9¼x3½x⅜	T
♦ 77	.....DR-70	4195	149	197	26900	8000	36x8D	11.25/20	Ow FBB401	6-4½x5	401	5.2	308	114-2600	7-2¼x11¾	Y	Own F52	5	Own R1700	2 SF	H	5.4-9.03*	Own F700	T4IA	618	923	G	PX	72	10x3½x⅜	T
♦ 78	....(D) DRD-70	5810	149	197	26900	9595	36x8D	11.25/20	Cum HB600	6-4⅞x6	672	17	500	150-1800	7-4½x16½	Y	Own F54	5	Own R1700	2 SF	H	5.4-9.03*	Own F700	T4IA	618	923	G	PX	72	10x3½x⅜	T
♦ 79	.....A-8	6200	160	225	38000	11835	9.75/20D	12.00/24	Own FEB	6-5x5½	648	4.4	460	140-2100	7-3¼x17¾	Y	Own H7	5	Own 1305	2 SF	H	4.95-9.44	Own FW910	T4IA	618	923	G	PD	72	12¼x3⅛x⅜	T
♦ 80	.....(D) AD-8	7185	160	225	38000	12285	9.75/20D	12.00/24	Cum HB600	6-4⅞x6	672	17.	500	150-1800	7-4½x16½	Y	Own H7	5	Own 1585	2 SF	H	4.95-9.44	Own FW910	T4IA	618	923	G	PD	72	12½x3⅜x⅜	T

† Rear 6.50/20. ° Rear 7.00/16. ‡ Rear 7.00/17. ± Rear 32x6 single. * Ford—Weight includes chassis and cab. ** Ford—Suggested retail price, distribution and delivery charges and all taxes extra. Price includes chassis and cab.
♦ Denotes new models or change in specifications. (•) Federal—Chassis weight shown is for average chassis without cab and complete with average size tires, tools, spare rim, fuel, oil and water.
—International—6-cyl. Diesel engine Model AA-600 also available in these chassis.

† Rear 6.50/20. ° Rear 7.00/16. ‡ Rear 7.00/17. ≠ Rear 32x6 single. * Ford—Weight includes chassis and cab. ** Ford—Suggested retail price, distribution and delivery charges and all taxes extra. Price includes chassis and cab.
♦ Denotes new models or change in specifications. (●) Federal—Chassis weight shown is for average chassis without cab and complete with average size tires, tools, spare rim, fuel, oil and water.
—International—6-cyl. Diesel engine Model AA-600 also available in these chassis.

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Line Number	MAKE AND MODEL	Chassis List Price	WHEEL-BASE Minimum Standard	WHEEL-BASE Maximum Standard	Gross Vehicle Weight for Normal Service	Chassis Weight (See definition)	TIRE SIZES D-dual rear S-single rear: Standard Front and Rear	TIRE SIZES: Maximum Authorized Tire Size (Duals unless noted)	ENGINE DETAILS: Make and Model	No. of Cylinders, Bore and Stroke	Displacement	Comp. Ratio	Torque lb. ft.	Max. Brake H.P. at R.P.M. Given	Main Bearings: Number, Diameter and Length	Governor Standard	TRANSMISSION: Make and Model	TRANSMISSION: Forward Sp'ds	REAR AXLE: Make and Model	REAR AXLE: Gear and Type	REAR AXLE: Drive & Torque	REAR AXLE: Gear Ratio Range in High	FRONT AXLE: Make and Model	BRAKES SERVICE: Make Location Type Operat'n	BRAKES SERVICE: Lining Area	BRAKES SERVICE: Drum Area	BRAKES SERVICE: Drum Material	BRAKES SERVICE: Hand Location Type	C-A Dimension (Min. Std. W. B.)	FRAME: Side Rail Dimensions	FRAME: Type
	Four-Wheel-Drive																														
1	Corbitt....(10) F-12	2375	Opt	Opt	12500	4460	6.50/20D	8.25/20	Con A6244	6-3 1/16 x4 3/8	244	5.4	170	83-3200	4-2 5/16x6 1/4	N	WG T9	8	Tim 53521H	SF	H	5.14-6.6	Wis F30B	L4IH	270	452	a	TX	Opt	7 1/4x3 1/2x 1/4	T
2	.....(10) F-14	3200	Opt	Opt	14500	5060	7.50/20D	8.25/20	Con M6271	6-3 1/2x4 5/8	271	5.7	191	85-2900	7-2 5/8x12 1/2	N	Cla B116C	8	Tim 54411H	SF	H	5.83-6.8	Wis F544B	L4IH	335	578	a	TD	Opt	8x3 1/2x1/4	T
3	.....(10) F-18	4500	Opt	Opt	18500	6900	8.25/20D	9.00/20	Con E-602	6-4 1/8x4 1/2	361	5.4	252	95-2500	7-2 5/8x13	N	Fu MGU	8	Wis 5002L	2F	H	6.00-8.21	Wis F501H1	L4IH	335	578	a	TD	Opt	9x2 1/2x1/4	D
4	.....(10) F-19	4300	Opt	Opt	19500	6500	8.25/20D	9.00/22	Con M-6330	6-4x4 5/8	330	5.5	238	103-3000	7-2 5/8x12 1/2	Y	Fu 5A330	10	Wis 5002L	2F	H	6.62-8.21	Wis F551H	L4IHV	335	578	a	TD	Opt	8x3 1/2x1/4	T
5	.....(10) F-23	5500	Opt	Opt	23500	9000	9.00/20D	9.75/22	Con 20-R	6-4 1/2x4 3/4	381	4.8	276	106-2600	7-2 3/4x13 1/2	N	Fu 5A430	10	Wis 72300H	2F	H	5.61-8.40	Wis F213H	L4IHV	534	786	a	TD	Opt	8 1/4x3 1/2x 1/4	T
6	.....(10) F-27	6800	Opt	Opt	27500	10000	9.75/22D	10.50/22	Con 21-R	6-4 3/4x4 3/4	428	5.0	325	125-2400	7-2 3/4x13 1/2	N	Fu 5A620	10	Wis 1337BH	2F	H	6.36-8.59	Wis F313H	L4IHV	625	976	a	TD	Opt	12 1/4x3 1/4 x 1/4	T
7	.....(10) F-35	8500	Opt	Opt	35500	12500	10.50/20D	11.25/24	Con 22-R	6-4 1/2x5 1/4	501	5.9	400	150-2200	7-2 5/8x12 1/2	N	Fu 5A620	10	Wis 1737KW	2F	H	6.39-9.16	Wis F417KW	Ws4IA	701	976	a	TD	Opt	12 1/4x3 1/4 x 1/4	T
8	F. W. D.....HS *	2750	132	Opt	15000	5580	7.00/20D	9.00/20	Wau BK	6-3 3/4x4 1/4	282	5.7	138	85-3200	7-2 5/8x10 1/4	Y	Fu 5B33	5	Own H	SF	H	7.1-7.85	Own HS	L4IHV	365	578	G	T4	68	8x3 1/4x 1/2	T
9	.....HH6 *	4450	138	Opt	20000	7960	9.75/20D	10.50/20	Wau MKR	6-4 1/8x4 3/8	381	5.3	270	91-2400	7-2 5/8x12 1/2	Y	Fu 5A43	5	Own HU	BF	H	6.7-9.8	Own HU	L4IHV	496	867	G	T4	86	7 1/4x3x	C
10	.....CUA *	4640	150	Opt	22000	7800	9.75/20S	10.50/20	Wau MZR	6-4 1/4x4 3/4	404	5.4	288	96-2400	7-2 5/8x12 1/2	Y	Own U	5	Own	BF	H	6.7-8.9	Own	L4IHV	496	867	G	T4	90	7 1/4x3x	C
11	.....CU *	4920	150	Opt	22000	8100	9.75/20S	10.50/20	Wau MZR	6-4 1/4x4 3/4	404	5.4	288	96-2400	7-2 5/8x12 1/2	Y	Own U	5	Own	BF	H	6.7-8.9	Own	L4IHV	496	867	G	T4	90	7 1/4x3x	C
12	.....SUA *	5440	150	Opt	25000	10050	11.25/20S	11.25/20	Wau SRLR	6-4 3/8x5 1/8	462	5.5	330	112-2400	7-3x13 1/2	Y	Fu 5A62	5	Own	BF	H	6.7-8.9	Own	L4IHV	496	867	G	T4	90	7 1/4x3x	C
13	.....SU *	5640	150	Opt	25000	10100	11.25/20S	11.25/20	Wau SRLR	6-4 3/8x5 1/8	462	5.5	330	112-2400	7-3x13 1/2	Y	Own U	5	Own	BF	H	6.7-8.9	Own	L4IHV	496	867	G	T4	90	7 1/4x3x	C
14	.....YU *	6300	150	Opt	27000	10570	10.50/20D	11.25/20	Wau SRKR	6-4 3/8x5 1/8	517	5.5	369	126-2300	7-3x13 1/2	Y	Own U	5	Own	BF	H	6.7-8.9	Own	L4IHV	496	867	G	T4	90	7 1/4x3x	C
15	.....MJ5 *	6700	150	Opt	28000	11200	9.75/20D	12.75/20	Wau SRKR	6-4 3/8x5 1/8	517	5.5	369	126-2300	7-3x13 1/2	Y	Fu 5A62	5	Wis 1337	2F	H	6.6-8.6	Own	L4IHV	578	976	G	T4	90	10 1/4x3x	C
16	.....MJ6 *	7040	150	Opt	30000	11450	10.50/20D	12.75/20	Wau SRKR	6-4 3/8x5 1/8	517	5.5	369	126-2300	7-3x13 1/2	Y	Own M	10	Wis 1337	2F	H	6.6-8.6	Own 1337	L4IHV	578	976	G	T4	90	10 1/4x3x	C
17	.....M7 *	8800	150	Opt	38000	12350	12.75/20S	13.50/20	Wau RBR	6-5x5 1/4	677	5.3	491	152-2400	4-3 1/2x11 3/8	Y	Own M	10	Wis 1757	2F	H	6.4-8.4	Own 1757	L4IHV	578	976	G	T4	90	10 1/4x3x	C
18	.....M10 * 10400		150	Opt	42000	13450	13.50/20S	13.50/24	Her HXE	6-5 3/4x6	935	5.3	615	198-2000	7-3 1/2x16 5/8	Y	Own M	10	Wis 1910	2F	H	7.16-9.3	Own 1910	W4IA	665	1030	G	T4	90	10 1/4x3x	C
19	.....(T) T26 *	2965	132	Opt	26000	5580	7.50/20D	9.00/20	Wau BK	6-3 3/4x4 1/4	282	5.7	188	85-3200	7-2 5/8x10 1/4	Y	Fu 5B330	5	Own H	SF	H	5.45-6.04	Own HS	L4IHV	365	578	G	T4	62	8x3 1/4x 1/2	C
20	.....(T) T32 *	3095	138	Opt	32000	7050	8.25/20D	9.00/20	Wau MKR	6-4 1/8x4 3/8	381	5.3	270	98-2400	7-2 5/8x12 1/2	Y	Fu 5A430	5	Own H	SF	H	6.04-7.1	Own H	L4IHV	365	578	G	T4	68	10x3x1/4	C
21	.....(T) T40 *	5450	134	Opt	40000	10500	9.75/20D	10.50/22	Wau SRKR	6-4 5/8x5 1/8	517	5.5	369	126-2300	7-3x13 1/2	Y	Fu 5A620	5	Own	BF	H	7.3-11.2	Own	L4IHV	568	868	G	T4	71	10x3x1/4	C
22	.....(T) T45 *	7725	134	Opt	45000	11140	10.50/24D	10.50/24	Wan RBR	6-5x5 3/4	677	5.3	491	152-2400	4-3 1/2x11 3/8	Y	BL 7481	8	Own	BF	H	**-8.3	Own	W4IA	512	867	G	T4	71	10x3x1/4	C
23	Hug.....44-4	5425	150	160	24000	9600	10.50/20S	10.50/20	Wau 6SRL	6-4 1/8x5 1/8	462	4.6	327	112-2200	7-3x12 1/4	Y	Fu 5A620	5	Wis 72000	2F	H	5.00-7.27	Wis F213	L4IHV	536	864	a	TD	70 3/4	9 1/8x3x 1/4	T
24	.....D-44-4	6840	150	160	24000	9600	10.50/20S	10.50/20	Bud 6LD468	6-4 1/4x5 1/2	468	12	345	114-2000	7-3x11 1/2	Y	Fu 5A620	5	Wis 72000	2F	H	5.00-7.27	Wis F213	L4IHV	536	864	A	TD	70 3/4	9 1/8x3x 1/4	T
25	45-4	6125	150	160	29000	11000	10.50/20S	10.50/20	Wau 6SRK	6-4 3/8x5 1/8	517	4.5	365	125-2200	7-3x13 1/2	Y	Fu 5A620	5	Wis 1337	2F	H	5.53-8.59	Wis F313	L4IHV	625	972	a	TD	70 3/4	9 1/8x3x 1/4	T
26	.....D-45-4	7500	150	160	29000	11000	10.50/20S	10.50/20	Bud 6LD468	6-4 1/4x5 1/2	468	12	345	114-2000	7-3x11 1/2	Y	Fu 5A620	5	Wis 1337	2F	H	5.53-8.59	Wis F313	L4IHV	625	972	A	TD	70 3/4	9 1/8x3x 1/4	T
27	46-4	8050	160	170	35000	11800	11.25/20S	11.25/20	Wau 6GAL	6-5x5 1/2	648	4.6	468	132-1800	7-4x18 3/8	Y	Spi 7351	4	Wis 1337	2F	H	5.75-9.16	Wis F417	W4IA	654	972	a	TD	86 1/2	10x3x3/4	T
28	.....D-46-4	9025	160	170	35000	11800	11.25/20D	11.25/20	Cum HB6	6-4 7/16x6	672	17	500	150-1800	7-4 1/2x16 1/2	Y	Spi 7351	4	Wis 1337	2F	H	5.75-9.16	Wis F417	W4IA	654	972	A	TD	86 1/2	10x3x3/4	T
29	Kenworth.....539	6118	134	146	24000	19180	9.00/20D	9.75/24	Bud K428	6-4 5/8x4 1/4	428	5.3	302	108-2400	7-3x11 1/2	Y	Fu 5A62	5	Wis 72300	2F	H	5.77-8.40	Wis F207	L4IHV	458	785	a	PD	72	7 1/2x3 1/4x1/2	C
30	540	7251	134	146	27700	10310	9.75/20D	9.75/24	Bud K428	6-4 5/8x4 1/4	428	5.3	302	108-2400	7-3x11 1/2	Y	Fu 5A62	5	Wis 1337	2F	H	6.85-9.41	Wis F323	Ws4IA	648	975	a	PD	72	7 1/2x3 1/4x1/2	C
31	541	7835	134	146	27700	10650	9.75/20D	9.75/24	Bud LO525	6-4 1/2x5 1/2	525	5.5	385	135-2200	7-3x11 1/2	Y	Fu 5A62	5	Wis 1337	2F	H	6.85-9.41	Wis F323	Ws4IA	648	975	a	PD	72	7 1/2x3 1/4x1/2	C
32	542	8412	134	146	35000	10935	10.50/20D	10.50/24	Bud LO525	6-4 1/2x5 1/2	525	5.5	385	135-2200	7-3x11 1/2	Y	Fu 5A62	5	Wis 1757	2F	H	6.02-8.50	Wis F427	Ws4IA	648	975	a	PD	72	7 1/2x3 1/4x1/2	C
♦ 33	Marmon-(e) LD5-4	1567	113	113	4500	2659	7.50/15S	9.00/15S	Ford V8	8-3 1/16 x3 1/4	221	6.1	155	85-3800	3-2.5x5 1/16	N	Ford	4	Ford	S1/4	U	**-4.44	Own LD5	FO4IH	162	264	ac	2I	38 1/2	5 1/2x2x.11	TDx
♦ 34	Herr...(e) OT4-4	1808	123	123	6800	3331	7.00/18S	9.75/18S	Ford V8	8-3 1/16 x3 1/4	221	6.1	155	85-3800	3-2.5x5 1/16	N	Ford	4	Ford	SF	H	*-4.86	Own OT4	FO4IH	201	308	ac	2I	48 1/2	6x2 1/4x 1/4	T
♦ 35	.....(e) JJ5-4	1645	134	134	13200	3959	6.00/20D	10.50/18S	Ford V8	8-3 1/16 x3 1/4	239	6.1	170	95-3600	3-2.5x5 1/16	N	Ford	4	Ford	SF	H	**-6.67	Own IX4-11	FO4IH	303	506	ac	TX	84 1/2	7x2 3/4x 1/2	T
♦ 36	.....(e) JJ6-4	1694	158	158	13200	4039	6.00/20D	10.50/18S	Ford V8	8-3 1/16 x3 1/4	239	6.1	170	95-3600	3-2.5x5 1/16	N	Ford	4	Ford	SF	H	**-6.67	Own IX4-11	FO4IH	303	506	ac	TX	84 1/2	7x2 3/4x 1/2	T
♦ 37	(e) (e.o.e.) JJ5-4	1874	134	134	13200	3994	6.00/20D	8.25/18	Ford V8	8-3 1/16 x3 1/4	239	6.1	170	95-3600	3-2.5x5 1/16	N	Ford	4	Ford	SF	H	**-6.67	Own IX4-12	FO4IH	303	506	ac	TX	93	7x2 3/4x 1/2	T
♦ 38	(e) (e.o.e.) JJ6-4	1905	158	158	13200	4074	6.00/20D	8.25/18	Ford V8	8-3 1/16 x3 1/4	239	6.1	170	95-3600	3-2.5x5 1/16	N	Ford	4	Ford	SF	H	**-6.67	Own IX4-12	FO4IH	303	506	ac	TX	117	7x2 3/4x 1/2	T
39	..... DSD100-4 *	3375	143	Op	13200	5070	6.50/20D	7.50/20	Her JXB	6-3 5/8x4 1/4	263	5.4	182	78-2800	7-2 1/2x10 1/4	N	WG T9WG	4	Tim MH1011	SF	H	*-6.6	TWH 101	L4IH	267	452	a	TX	60	7 1/8x2 1/2x 3/32	C
40	..... DSD200-4 *	3635	143	Op	13200	5305	7.00/20D	7.50/20	Her JXC	6-3 3/4x4 1/4	282	5.3	196	84-2800	7-2 1/2x10 1/4	N	Ful 5A33	5	Tim MH1011	SF	H	*-6.6	TWH 101	L4IH	267	452	a	TX	60	7 1/8x2 1/2x 3/32	C
41	..... DSD300-4 *	3980	143	Op	15900	5795	7.50/20D	8.25/20	Her JXD	6-4x4 1/4	320	5.3	224	95-2800	7-2 1/2x10 1/4	N	Ful 5A33	5	Tim MH1022	SF	H	*-6.8	TWH 102	L4IH	281	527	a	TX	60	7 1/8x2 1/2x 3/32	C
42	..... DSD400-4 *	5275	158	Op	19500	7812	8.25/20D	9.00/20	Her WXC3	6-4 1/4x4 1/2	383	5.0	260	106-2800	7-2 5/8x13 1/4	Y	Ful 5A430	5	Tim MH1033	SF	H	*-6.83	TWH-103	L4IH	342	578	a	FD	72	9 1/8x3x 1/4	C
43	..... DSD500-4 *	5860	158	Op	23400	8710	9.00/20D	9.75/20	HerWXLC3	6-4 1/4x4 3/4	404	5.0	293	118-2800	7-2 5/8x13 1/4	Y	Ful 5A430	5	Tim MH1044	SF	H	*-7.8	WH 104	L4IH	384	785	a	FD	72	9 1/8x3x 1/4	C
44	..... DSD550-4 *	6440	158	Op	23400	8970	9.00/20D	9.75/20	Her RXB	6-4 1/2x5 1/4	501	4.5	330	110-2200	7-3x13 1/4	Y	Ful 5A620	5	Tim MH1044	SF	H	*-7.8	WH 104	L4IH	384	785	a	FD	72	9 1/8x3x 1/4	C
45	...DSD550DR-4 *	7350	158	Op	23400	9980	9.00/20D	9.75/20	Her RXB	6-4 1/2x5 1/4	501	5.4	360	121-2200	7-3x13 1/4	Y	Ful 5A620	5	Wis MH1066	2F	H	*-7.52	WH 106	L4IH	738	975	a	FD	72	9 1/8x3x 1/4	C
46	..... DSD600-4 *	7700	161	Op	23400	9730	9.00/20D	9.75/20	Her RXB	6-4 1/2x5 1/4	501	5.4	360	121-2200	7-3x13 1/4	Y	Ful 5A620	5	Wis MH1055	2F	H	*-7.21	WH 105	L4IH	461	785	a	FD	72	9 1/8x3x 1/4	C
47	..... DSD700-4 *	8895	161	Op	25200	10330	9.75/20D	9.75/22	Her RXB	6-4 1/2x5 1/4	501	5.4	360	121-2200	7-3x13 1/4	Y	Ful 5A620	5	Wis MH1077	2F	H	*-7.52	WH 107	Ws4IA	738	975	a	FD	72	10 1/8x3x 1/4	C
48	..... DSD800-4 *	9750	161	Op	30000	10880	10.50/20D	10.50/22	Her RXC	6-4 5/8x5 1/4	529	4.9	390	131-2200	7-3x13 1/4	Y	Ful 5A620	5	Wis MH1088	2F	H	*-8.23	WH 108	Ws4IA	738	975	a	FD	72	10 1/8x3x 1/4	C
49	..... DSD900-4 *12785		198	Op	30000	13530	10.50/20D	10.50/22	Her HXD	6-5 1/2x6	855	4.5	555	180-2200	7-3 1/2x16 5/8	Y	Ful 4A86	4	Wis MH1088	2F	H	*-8.23	WH 108	Ws4IA	738	975	a	FD	102	10 1/8x3x 3/8	P
50	..... DSD1000-4 *13850		198	Op	40000	15680	10.50/24D	10.50/24	Her HXE	6-5 3/4x6	935	4.5	610	198-2200	7-3 1/2x16 5/8	Y	Ful 4A86	4	Wis MH1099	2F	H	*-8.88	WH 109	Ws4IA	738	975	a	FD	102	10 1/8x3x 3/8	P
51	(D) DDSD200-4 *	4920	143	Op	13200	5705	7.50/20D	7.50/20	Her DJXB	6-3 1/16x4 1/2	260	14.	178	79-2600	7-3x10 1/2	N	Ful 5A33	5	Tim MH1011	SF	H	*-5.66	TWH 101	L4IH	267	452	a	TX	60	7 1/8x2 1/2x 3/32	C
52	(D) DDSD300-4 *	5155	143	Op	15900	6185	7.50/20D	8.25/20	Her DJXC	6-3 3/4x4 1/4	298	14.	208	83-2600	7-3x10 1/2	Y	Ful 5A33	5	Tim MH1022	SF	H	*-5.83	TWH 102	L4IH	281	527	a	TX	60	7 1/8x2 1/2x 3/32	C
53	D DDSD550DR-4 *	9640	158	Op	23400	10590	9.00/20D	9.75/20	Her DRXB	6-4 3/8x5 1/4	474	14.	350	124-2200	7-3x13 1/4	Y	Ful 5A620	5	Wis MH1066	2F	H	*-6.65	WH 106	L4IH	738	975	a	FD	72	9 1/8x3x 1/4	C
54	(D) DDSD700-4 *11350		161	Op	25200	10940	9.75/20D	9.75/22	Her DRXB	6-4 3/8x5 1/4	474	14.	350	124-2200	7-3x13 1/4	Y	Ful 5A620	5	Wis MH1077	2F	H	*-6.65	WH 107	Ws4IA	738	975	a	FD	72	10 1/8x3x 1/4	C
55	(D) DDSD800-4 *12150		161	Op	30000	11465	10.50/20D	10.50/22	Her DRXB	6-4 3/8x5 1/4	474	14.	350	124-2200	7-3x13 1/4	Y	Ful 5A620	5	Wis MH1088	2F	H	*-7.0	WH 108	Ws4IA	738	975	a	FD	102	10 1/8x3x 3/8	P
56	(D) DDSD900-4 *15310		198	Op	30000	14230	10.50/20D	10.50/22	Her DHXB	6-5x6	707	14.	530	176-1800	7-3 1/4x17	Y	Ful 4A86	4	Wis MH1088	2F	H	*-7.22	WH 108	Ws4IA	738	975	a	FD	102	10 1/8x3x 3/8	P
57	(D) DDSD1000-4 *16105		198	Op	40000	16405	10.50/24D	10.50/24	Her DHXB	6-5x6	707	14.	530	176-1800	7-3 1/4x17	Y	Ful 4A86	4	Wis MH1099	2F	H	*-7.95	WH 109	Ws4IA	738	975	a	FD	102	10 1/8x3x 3/8	P
♦ 58	Oshkosh W-100 *	3085	130	160	15000	6300	7.00/20D	8.25/20	Her JXC	6-3 3/4x4 1/4	282	5.3	197	85-3000	7-2 1/2x10 1/4	Y	Fu 5B33	5	Own 100	SF	H	6.8	Own 100	L4IH†	335	578	a	TX	71	6x3 1/2x 1/4	Tfp
♦ 59	.... W-200 *	3750	130	160	18000	6600	7.50/20D	8.25/20	Her JXD	6-4x4 1/4	320	5.3	224	94-2800	7-2 1/2x10 1/4	Y	Fu 5B33	5	Own 200	SF	H	5.71	Own 200	L4IH	335	578	a	TX	71	6x3 1/2x 1/4	Tfp
60	.....W-300 *	4900	149	205	22000	9100	10.00/20S	11.00/20	Her WXC3	6-4 1/4x4 1/4	383	6.0	285	101-2400	7-2 5/8x13 1/4	Y	Fu 5A43	5	Own 300	SF	H	7.8	Own 300	L4IH	560	867	G	TX	82	8 1/4x3x 3/8	Tf
61	.....W-304 *	5000	149	205	23000	9200	10.00/20S	11.00/20	HerWXLC3	6-4 1/4x4 3/4	404	6.0	310	118-2500	7-2 5/8x13 1/4	Y	Fu 5A43	5	Own 304	SF	H	7.8	Own 304	L4IH	560	867	G	TX	82	8 1/4x3x 3/8	Tf
♦ 62	.....W-400 *	5965	150	204	25000	10850	11.00/20S	12.00/20	Her YXC3	6-4 1/4x4 3/4	478	4.7	345	116-2200	7-3x14	Y	Fu 5A620	5	Own 400	2F	H	8.6	Own 400	L4IH	500	867	G	TX	82	8 1/4x3x 3/8	Tf
♦ 63	.....W-500 *	6165	150	204	27000	10600	11.00/20S	12.00/20	Her RXB	6-4 1/2x5 1/4	500	5.4	360	121-2200	7-3x12 1/4	Y	Fu 5A620	5	Own 500	2F	H	7.5-8.6	Own 500	L4IH	630	975	G	TX	82	8 1/4x3x 3/8	Tf
♦ 64	.....W-600 *	6750	150	204	27000	11100	11.00/20D	12.00/20	Her RXBO	6-4 1/2x5 1/4	500	5.4	360	121-2200	7-3x12 1/4	Y	Fu 5A620	10	Own 600	2F	H	7.27-8.6	Own 600	L4IH	630	975	G	TX	82	10 1/8x3x 3/8	Tf
♦ 65	.....W-700 *	6900	150	204	30000	11500	11.00/20D	12.00/20	Her RXCO	6-4 5/8x5 1/4	529	5.4	380	128-2200	7-3x12 1/4	Y	Fu 5A620	10	Own 700	2F	H	7.27-8.6	Own 700	L4IH	630	975	G	TX	82	10 1/8x3x 3/8	Tf
♦ 66	.....W-800 *	7975	150	204	31500	12300	11.00/20D	12.00/20	Her RXLD	6-4 1/2x5 1/4	558	5.4	405	141-2200	7-3x12 1/4	Y	Fu 5A620	10	Own FD	2F	H	8.05-9.15	Own FD	L4IH	630	975	G	TX	82	10 1/8x3x 3/8	Tf
♦ 67	.....BG3 *	9200	168	190	39000	14200	14.00/20S	14.00/20S	Her HXB	6-5x6	707	4.5	505	161-2100	7-3 1/2x16 5/8	Y	Fu 4A86	4	Own BG	2F	H	4.7-6.8	Own BG3	B4IM	740	1190	G	TX	85	10x3 1/4x1/2	L
♦ 68	.....GD *10400		168	190	43000	14500	14.00/20S	14.00/20S	Her HXE	6-5 3/4x6	935	4.5	610	199-2100	7-3 1/2x16 5/8	Y	Fu 4A86	4	Own GD	2F	H	5.3-7.4	Own GD	B4IM	740	1190	G	TX	85	10x3 1/4x1/2	L
69	Walter...(c.f.) FN	5400	126	150	20000	7500	10.00/20S	10.00/20D	Wau MKR	6-4 1/16x4 3/4	381	5.3	270	90-2200	7-2 5/8x10 1/4	Y	Own FJN	6	Own FNB	2D	H	6.0-8.0	Own FN	O4IA	470	670	G	FI	84	7x2 3/4x1/4	T
70	.....(c.f.) FM	6500	126	150	24000	8500	11.00/20S	11.00/20D	Wau SRLR	6-4 3/8x5 1/8	462	5.5	325	110-2200	7-3x13 1/2	Y	Own FJD	6	Own FMB	2D	H	6.0-8.0	Own FM	O4IA	470	670	G	FI	84	12x3 1/2x1/2	TB
71	.....(c.f.) FKM	7000	126	150	26000	9000	10.00/20D	11.00/20D	Wau SRKR	6-4 5/8x5 1/8	517	5.5	365	125-2200	7-3x13 1/2	Y	Own FJD	6	Own FJB	2D	H	6.0-8.0	Own FJ	O4IA	470	670	G	FI	84	12x3 1/2x1/2	TB
72	.....(c.f.) FCK	8400	126	138	30000	10500	10.00/24D	11.00/24D	Wau SRKR	6-4 5/8x5 1/8	517	5.5	365	125-2200	7-3x13 1/2	Y	Own FC	6	Own FCC	2D	H	7.5-9.0	Own FC	O4IA	585	890	G	FI	84	13x3 1/4x1/2	TB
73	.....(c.f.) FC	8600	138	162	32000	11000	10.00/24D	11.00/24D	Wau SRKR	6-4 5/8x5 1/8	517	5.5	365	125-2200	7-3x13 1/2	Y	Own FC	6	Own FCC	2D	H	7.5-9.0	Own FC	O4IA	585	890	D	FI	96	14x3 3/4x1/2	TB
74	.....(c.f.) FB	9900	138	162	32000	12000	11.00/24D	11.00/24D	Wau 6RBR	6-5x5 3/4	677	5.3	485	150-2100	4-3 1/2x11 3/8	Y	Own FA	6	Own FCC	2D	H	7.5-9.0	Own FC	O4IA	585	890	D	FI	96	14x3 3/4x1/2	TB
75	.....(c.f.) FBR	10500	138	162	42000	13000	12.00/24D	13.00/24D	Wau 6RBR	6-5x5 3/4	677	5.3	485	150-2200	4-3 1/2x11 3/8	Y	Own FA	6	Own FCR	2D	H	7.5-9.0	Own FCR	O4IA	585	890	D	FI	96	14x3 3/4x1/2	TB
76	.....(c.f.) FXB	10700	138	162	32000	12000	11.00/24D	12.00/24D	Her HXE	6-5 3/4x6	935	4.5	610	200-2000	7-3 1/2x16 5/8	Y	Own FA	6	Own FCC	2D	H	7.5-9.1	Own FC	O4IA	585	890	D	FI	108	14x3 3/4x1/2	TB

(*) Prices includes chassis and cab. ♦ Denotes new models or change in specifications.

(*) Prices includes chassis and cab. ♦ Denotes new models or change in specifications.

Six-Wheelers
Wheels Driven

77		..(D) (e.f.)	ADK	10000	126	138	30000	12000	10.00/24D	11.00/24D	Her DRXB	6-4⅜x5¼	474	14	350	125-2000	7-3x13¼	Y	Own FA	6	Own FCC	2D	H	7.5-9.1	Own FC	O4IA	585	890	D	FI	96	14x3¾x½	TB
78		..(D) (e.f.)	ADB	11000	138	162	32000	13000	11.00/24D	12.00/24D	Cum HB6	6-4⅞x6	672	17	500	150-1800	7-4½x16	Y	Own FA	6	Own FCC	2D	H	7.5-9.1	Own FC	O4IA	585	890	D	FI	108	14x3¾x½	TB
79		..(D) (e.f.)	ADV	13300	126	162	65000	17000	14.00/24D	15.00/24D	Cum HB6	6-4⅞x6	672	17	500	150-1800	7-4½x16	Y	Own AV	6	Own AV	2D	H	**10.5	Own AV	O4IA	660	1020	D	FI	96	16x4x⅝	TB
80																																						
♦ 81		Ward La Fr...204		7650	156	Opt	50000	13000	10.50/20D	12.00/24	Wau SRKR	6-4½x5½	517	5.0	365	126-2400	7-3x13⅞	Y	Fu 5A620	9	Wis 1757W	2F	S	**-9.20	Wis F427W	Ws4IA	548	867	a	TD	126	12x3¼	T
82		Cor-																																				
83		bitt(10)	35SB2	2F	4800	Opt	Op	35000	9100	9.00/20D	9.75/22	Con E603	6-4¼x4½	383	5.6	280	104-2400	7-2⅝x13	N	Fu 5A430	5	Ti SBT1500TW	SF	A	6.06-7.40	Ti 33000TW	Ws6IA	636	1094	a	TD	Opt	8⅛x3½x⅞	T
84		(10)	40SB2	2F	5800	Opt	Op	40000	10700	9.75/20D	10.50/22	Con 21R	6-4⅜x4⅝	428	5.0	325	125-2400	7-2⅝x13⅞	N	Fu 5A620	5	Ti SBT 252W	SF	A	4.55-7.80	Ti 35100TW	Ws6IA	668	1193	a	TD	Opt	8⅛x3½x⅞	T
85		(10)..18SB4		4R	3950	Op	Op	18000	5800	7.00/20D	7.50/20	Con A6244	6-3⅞x4⅝	244	5.4	170	83-3200	4-2⅝x6⅝	N	Cla B116C	4	Ti SBD800H	SF	A	6.26-8.05	Tim 30020H	L6IHV	382	608	a	TX	Opt	8x3½x¼	T
86		(10)..18SB2		2F	2000	Opt	Op	18000	5300	7.00/20D	7.50/20	Con A6244	6-3⅞x4⅝	244	5.4	170	83-3200	4-2⅝x6⅝	N	Cla B116C	4	Ti SBT800H	SF	A	5.14-6.60	Tim 30020H	L6IHV	382	608	a	TX	Opt	8x3½x¼	T
87		(10)..25SB2		2F	3750	Opt	Op	25000	7670	8.25/20D	9.00/20	Con M6290	6-3¾x4⅝	290	5.5	206	87-2800	7-2⅝x12⅞	N	Fu 5A330	5	Ti SBT1000TW	SF	A	4.86-6.80	Ti 31000TW	Ws6IA	574	930	a	TX	Opt	8x3½x¼	T
88		(10)..25SB4		4R	5720	Op	Op	25000	9000	8.25/20D	9.00/20	Con M6290	6-3¾x4⅝	290	5.5	206	87-2800	7-2⅝x12⅞	N	Fu 5A330	5	Ti SBD1000TW	SF	A	5.93-8.30	Ti 31000TW	Ws6IA	574	930	a	TX	Opt	8x3½x¼	T
89		(10)..35SB4		4R	6380	Op	Op	35000	10000	9.00/20D	9.75/22	Con E603	6-4¼x4½	383	5.6	280	104-2400	7-2⅝x13	N	Fu 5A430	5	TimSBD1500	SF	A	5.41-9.03	Ti 33000TW	Ws6IA	636	1094	a	TD	Opt	8⅛x3½x⅞	T
90		(10)..40SB4		4R	8800	Op	Op	40000	11500	9.75/20D	10.50/22	Con 21R	6-4⅜x4⅝	428	5.0	325	125-2400	4-2⅝x13⅛	N	Fu 5A620	5	Tim SD252W	2F	A	5.90-8.40	Ti 35100TW	Ws6IA	668	1193	a	TD	Opt	8⅛x3½x⅞	T
91		(10)..18SB6		6	5500	Op	Op	18000	7300	7.00/20D	8.25/20	Con A6244	6-3⅞x4⅝	244	5.4	170	83-3200	7-2⅝x6⅝	N	Cla B116C	8	Ti SBD800H	SF	A	4.57-6.60	Wis F30B	L6IHV	396	678	a	TX	Opt	8x3½x¼	T
92		(10)..25SB6		6	7500	Op	Op	25000	8200	8.25/20D	9.00/22	Con M6330	6-4x4⅜	330	5.5	238	103-3000	7-2⅝x12⅞	N	Fu 5A330	10	TimSBD1000	SF	A	4.86-6.80	Wis F544H	Ws6IA	574	930	a	TD	Opt	8x3½x¼	T
93		(10)..40SD6		6	8900	Op	Op	40000	11700	9.00/20D	9.75/22	Con 22R	6-4⅛x5¼	501	5.9	400	150-2200	7-2⅝x12⅞	N	Fu 5A620	10	Ti SD252TW	2F	A	6.41-9.33	Wis F209TW	Ws6IA	685	1220	a	TD	Opt	12x3½x¼	T
94		(10)..50SD6		6	12300	Op	Op	50000	14600	9.75/20D	10.50/22	Her HXC	6-5¼x6	779	5.3	555	178-2100	7-3½x17	N	Spi 7551	10	Tim SD352W	2F	A	7.33-9.11	Wis F310W	Ws6IA	1084	1626	a	TD	Opt	12x3¼x⅞	T
95		(10)..54SD6		6	16900	Op	Op	54000	15400	9.75/22D	10.50/22	Her HXC	6-5¼x6	779	5.3	555	178-2100	7-3½x17	N	BL 7541	8	Tim SD452W	2F	A	7.33-9.11	Wis F311W	Ws6IA	1084	1625	a	TD	Opt	12¼x3¼x⅞	T
96		Dart.....1000		4R	4050	161	268	24500	7540	32x6D	9.00/20	Her JXD	6-4x4¼	320	5.6	204	84-2800	7-2¼x10¼	Y	Fu 5A330	5	Ti SBD1000H	2F	T	5.93-8.30	Tim 31005H	L6IHV	537	930	a	TX	Opt	10x3x¼	L
97		1500		4R	5200	161	268	30000	10140	34x7D	9.75/20	Her WXC3	6-4¼x4½	353	4.7	262	106-2800	7-2⅝x13⅛	Y	Fu 5A430	5	TimSBD1500	2F	T	5.41-9.03	Tim 33000H	L6IHV	603	1095	a	TX	Opt	10x3x¼	L
♦ 98		252		4R	5600	152	268	33000	12794	34x7D	9.00/20	Her WXC3	6-4¼x4½	383	4.7	262	106-2800	7-2⅝x13¼	Y	Fu 5A430	10	Tim SD252H	2F	T	5.90-8.44	Tim 33000H	L6IHV	603	1095	a	TD	Opt	10x3x¼	B
99		352		4R	9850	156	261	39000	15594	9.75/20D	10.50/24	Her RXLD	6-4¾x5¼	558	4.9	410	144-2200	7-3x14	Y	Fu 5A620	12	Tim SD352W	2F	T	7.33-10.2	Ti 27450TW	Ws6IA	874	1517	a	TD	Opt	10x3½x⅞	B
100		Dia.T.614-252H		4R	3895	177	227	32000	9200	9.00/20D	9.00/20	Her CBJXD	6-4x4¼	320	5.9	228	96-2800	7-2½x10½	Y	Cla 200V	10	Tim SD252H	2F	R	Opt.	Cla F324	W6IA	737	1122	A	TD	107	8⅛x3⅛x1¼	TF
101		806W-252TW		4R	5450	156	234	33000	10500	9.00/20D	9.75/22	Her CBWXLC3	6-4¼x4¾	404	5.5	300	114-2800	7-2⅝x13¼	Y	Cla 270V	5	Tim SD252TW	2F	R	Opt.	Tim 35100W	W6IA	798	1292	A	TD	86	10⅛x3⅛x⅞	T
102		900W-353W		4R	7975	168	234	40000	13000	9.75/20D	9.75/24	Her RXLC	6-4½x5¼	529	5.4	365	136-1800	7-3x13¼	Y	B-L 6241&703	8	Tim SD353W	2F	R	Opt.	Tim 36020TW	W6IA	1006	1617	A	TD	98	10⅛x3⅛x⅞	T
103		900W-454W		4R	8665	168	234	50000	14000	10.50/20D	10.50/24	Her RXLC	6-4½x5¼	529	5.4	365	136-1800	7-3x13¼	Y	B-L 6241&703	8	Tim SD454W	2F	R	Opt.	Tim 36020TW	W6IA	1006	1617	A	TD	98	10⅛x3⅛x⅞	TF
104		Federal...202		2F	1950	162	215	21000	6650	7.00/20D	7.50/20	Her JXBF	6-3⅝x4¼	263	6.1	187	82-3000	7-2½x10⅛	Y	WG T9	4	Tim SBT800	SF	R	5.83-6.80	Tim 31000H	L6IHV	475	828	a	TD	83	8⅛x2⅞x¼	TP
105		204		4R	2550	162	215	22000	7200	7.00/20D	7.50/20	Her JXBF	6-3⅝x4¼	263	6.1	187	82-3000	7-2½x10⅛	Y	WG T9	4	Tim SBD800	SF	R	7.11-8.30	Tim 31000H	L6IHV	475	828	a	TD	83	8⅛x2⅞x¼	TP
106		252		2F	2545	162	215	25000	7650	7.50/20D	8.25/20	Her JXCF	6-3⅞x4¼	282	5.9	208	85-2900	7-2½x10⅛	Y	Cla 185F	4	Tim SBT1000	SF	R	5.83-6.80	Tim 31000H	L6IHV	531	930	a	TD	83	8⅛x2⅞x¼	TP
107		254		4R	3000	162	215	26000	8050	7.50/20D	8.25/20	Her JXCF	6-3¾x4¼	282	5.9	208	85-2900	7-2½x10⅛	Y	Cla 185F	4	TimSBD1000	SF	R	5.93-8.30	Tim 31000H	L6IHV	531	930	a	TD	83	8⅛x2⅞x¼	TP
108		292		2F	3290	162	215	30000	8650	8.25/20D	9.00/20	Her JXDF	6-4x4¼	320	5.9	244	95-2800	7-2½x10⅛	Y	Cla 205V	5	Tim SBT155	SF	R	6.16-7.40	Tim 32514H	L6IHV	657	1168	a	TD	83	8⅛x2⅞x¼	TP
109		294		4R	3900	162	215	32000	9200	8.25/20D	9.00/20	Her JXDF	6-4x4¼	320	5.9	244	95-2800	7-2½x10⅛	Y	Cla 205V	5	TimSBD1500	SF	R	6.44-9.03	Tim 32514H	L6IHV	657	1168	a	TD	83	8⅛x2⅞x¼	TP
110		452		2F	4425	167	220	33000	10250	9.00/20D	9.00/20	Wau 6MKRF	6-4½x4¾	381	5.0	270	90-2400	7-2⅝x12½	Y	Cla 270V	5	Tim SBT251	SF	R	5.57-7.80	Tim 33006H	L6IHV	835	1386	a	TD	87	10⅛x3⅛x⅞	TB
♦ 111		552		2F	6140	167	220	36000	11800	9.00/20D	10.50/20	Wau 6MZRF	6-4¼x4¾	404	5.4	288	106-2500	7-2⅝x12½	Y	Cla 270V	5	Tim SDT352	2F	R	6.85-9.41	Ti 35000TW	Ws6IA	964	1418	a	TD	87	10⅛x3⅛x⅞	TB
112		554		4R	5225	167	220	36000	11100	9.00/20D	9.75/20	Wau 6MZRF	6-4¼x4¾	404	5.4	288	106-2500	7-2⅝x12½	Y	Cla 270V	5	Ti SBD1500	SF	R	6.44-9.03	Tim 35011H	L6IHV	657	1168	a	TD	87	10⅛x3⅛x⅞	TB
113		.....554A		4R	6825	167	220	40000	12600	9.00/20D	10.50/20	Wau 6MZRF	6-4¼x4¾	404	5.4	288	106-2500	7-2⅝x12½	Y	Cla 270V	5	Tim SDD352	2F	R	7.33-9.11	Ti 35000TW	Ws6IA	964	1418	a	TD	87	10⅛x3⅛x⅞	TB
114		..(c.o.e.)	802	2F	2040	127	180	21000	6700	7.00/20D	7.50/20	Her JXBF	6-3⅝x4¼	263	6.1	187	82-3000	7-2½x10⅛	Y	WG T9	4	Tim SBT800	SF	R	5.83-6.80	Tim 31102H	L6IHV	475	828	a	TD	83	8⅛x2⅞x¼	TP
115		..(c.o.e.)	852	2F	2645	127	180	25000	7700	7.50/20D	8.25/20	Her JXCF	6-3¾x4¼	282	5.9	208	85-2900	7-2½x10⅛	Y	Cla 185F	4	Tim SBT1000	SF	R	5.83-6.80	Tim 32515H	L6IHV	575	1006	a	TD	83	8⅛x2⅞x¼	TP
116		..(c.o.e.)	892	2F	3355	127	180	30000	8700	8.25/20D	9.00/20	Her JXDF	6-4x4¼	320	5.9	244	95-2800	7-2½x10⅛	Y	Cla 205V	5	Tim SBT155	SF	R	6.16-7.40	Tim 32515H	L6IHV	657	1168	a	TD	83	8⅛x2⅞x¼	TP
117		F.W.D.....MJ6X6		*11575	184	Opt	45000	17250	10.50/20D	12.75/20	Wau SRKR	6-4⅝x5½	517	5.5	369	126-2300	7-3x13¼	Y	Own M	10	Wis SD352	2F	H	*-8-6	Own 1337	W6IA	1085	1680	G	T4	126	10⅛x3x⅛	PC
118		.....M6X6		*14555	184	Opt	55000	18250	13.50/20S	12.75.24	Wau RBR	6-5x5¾	677	5.3	491	152-2400	4-3½x11⅝	Y	Own M	10	Wis SD520	2F	H	*10.01	Own 1910	W6IA	1085	1680	G	T4	126	10⅛x3x⅛	PC
119		Hug.....99		4R	9300	175	175	64000	15100	11.25/20D	11.25/20	Wau 6GAL	6-5x5½	648	4.6	468	132-1800	7-4x18⅝	Y	Spi 7341	4	Tim SD452	2F	T	7.33-10.2	Shu 1673	W6IA	1027	1581	a	TD	92	9x4⅛x⅞	I
120		.....(D) 99		4R	10275	175	175	64000	15100	11.25/20D	11.25/20	Cum HB6	6-4⅞x6	672	17	500	150-1800	7-4x18⅝	Y	Spi 7341	4	Tim SD452	2F	T	7.33-10.2	Shu 1673	W6IA	1027	1581	a	TD	92	9x4⅛x⅞	I
121		.....99S		4R	11300	175	175	75000	18140	12.75/20D	12.75/20	Wau 6GAL	6-5x5½	648	4.6	468	132-1800	7-4x18⅝	Y	Spi 7341	4	Tim SD520	2F	T	7.33-10.2	Shu 1673	W6IA	1027	1581	a	TD	92	9x4⅛x⅞	I
122		....(D) 99S		4R	12275	175	175	75080	11400	12.75/20D	12.75/20	Cum HB6	6-4⅞x6	672	17	500	150-1800	7-4x18⅝	Y	Spi 7341	4	Tim SD520	2F	T	7.33-10.2	Shu 1673	W6IA	1027	1581	a	TD	92	9x4⅛x⅞	I
♦ 123		International (11)																																						
♦ 124		....D-186-T		2F	1475	148	191	18000	5290	6.50/20	7.50/20	Own HD232	6-3⅞x4½	233	6.0	170	81-3200	4-2⅝x6⅛	N	Own H41A	4	Own RT1200	FB	HT	6.17-6.66	Own F301	B6IHV	466	648	c	PX	77	8¼x3⅞x⅛	T
♦ 125		...DS-186-T		2F	1590	148	191	18000	5390	6.50/20	7.50/20	Own HD232	6-3⅞x4½	233	6.0	170	81-3200	4-2⅝x6⅛	N	Own H41A	4	Own RT2200	dFB	HT	5.14-8.81	Own F301	B6IHV	466	648	c	PX	77	8¼x3⅞x⅛	T
♦ 126		....D-216-T		2F	1760	176	194	21000	6270	7.00/20	8.25/20	Own FAB24I	6-3½x4½	242	5.8	176	84-3200	4-2⅜x5⅛	N	Own H41A	4	Own RT1400	FB	HT	6.50-7.16	Own F400	B6IHV	565	780	c	PX	102	8¼x3⅞x⅛	T
♦ 127		...DS-216-T		2F	1945	176	194	21000	6395	7.00/20	8.25/20	Own FAB24I	6-3½x4½	242	5.8	176	84-3200	4-2⅜x5⅛	N	Own H41A	4	Own RT2410	dFB	HT	5.63-8.52	Own F400	B6IHV	565	780	c	PX	102	8¼x3⅞x⅛	T
♦ 128		....D-216-F		4R	2185	151	194	21000	6650	7.00/20	8.25/20	Own FAB24I	6-3½x4½	242	5.8	176	84-3200	4-2⅜x5⅛	N	Own H41A	4	Own RF1420	FB	HT	5.85-7.37*	Own FXX400	B6IHV	565	780	c	PX	77	8¼x3⅞x⅛	T
♦ 129		....D-246-T		2F	2850	161	215	24000	8065	7.50/20	9.00/20	Own FBB318	6-3⅞x4½	318	5.4	241	100-2800	7-2¼x11⅛	Y	Own F51	5	Own RT1500	FB	HT	5.62-7.16	Own FX500	B6IHV	589	855	c	PX	84	9¼x3⅞x⅜	T
♦ 130		...DS-246-T		2F	3060	161	215	24000	8065	7.50/20	9.00/20	Own FBB318	6-3⅞x4½	318	5.4	241	100-2800	7-2¼x11⅛	Y	Own F52C	5	Own RT2500	dFB	HT	5.62-8.74	Own FX500	B6IHV	589	855	c	PX	84	9¼x3⅞x⅜	T
♦ 131		...DR-246-T		2F	3015	161	215	24000	8200	7.50/20	9.00/20	Own FBB3 8	6-3⅞x4½	318	5.4	241	100-2800	7-2¼x11⅛	Y	Own F51	5	Own RT1550	2 FB	HT	7.10-8.50	Own FX500	B6IHV	589	855	c	PX	84	9¼x3⅞x⅜	T
♦ 132		▲(D)DD246T		2F	4200	161	215	24000	9025	7.50/20	9.00/20	Cum HB400	4-4⅞x6	448	17.	330	100-1800	5-4½x11½	Y	Own F52	5	Own RT1500	FB	HT	5.62-8.74*	Own FX500	B6IHV	589	855	c	PX	84	9¼x3⅞x⅜	T
♦ 133		....D-246-F		4R	3150	161	215	24000	8320	7.50/20	9.00/20	Own FBB318	6-3⅞x4½	318	5.4	241	100-2800	7-2¼x11⅛	Y	Own F51	5	Own RF1401	FB	HT	7.19-8.19*	Own FX500	B6IHV	600	816	c	PX	84	9¼x3⅞x⅜	T
♦ 134		▲(D)DD246F		4R	4500	161	215	24000	9170	7.50/20	9.00/20	Cum HB400	4-4⅞x6	448	17.	330	100-1800	5-4½x11½	Y	Own F52	5	Own RF1401	FB	HT	7.19-8.19	Own FX500	B6IHV	600	816	c	PX	84	9¼x3⅞x⅜	T
♦ 135		...DR-346-T		2F	5000	161	215	34000	10125	9.00/20	9.75/20	Own FBB40I	6-4⅛x5	401	5.2	308	114-2600	7-2¾x11¾	Y	Own F52	5	Own RT1660	2 FB	HT	5.40-9.03	Own F700	T6IA	801	1192	G	PX	84	10⅛x3⅞x⅜	T
♦ 136		▲(D)DRD346T		2F	6300	161	215	34000	11250	9.00/20	9.75/20	Cum HB400	4-4⅞x6	448	17.	330	100-2800	5-4½x11½	Y	Own F52	5	Own RT1660	2 FB	HT	5.40-9.03	Own F700	T6IA	801	1192	G	PX	84	10⅛x3⅞x⅜	T
♦ 137		....D-346-F		4R	5750	161	215	34000	11080	9.00/20	9.75/20	Own FBB40I	6-4⅛x5	401	5.2	308	114-2600	7-2¾x11¾	Y	Own F52	5	Own RF1610	FB	HT	6.22-7.93*	Own F700	T6IA	801	1192	G	PX	84	10⅛x3⅞x⅜	T
♦ 138		(D)DD-346-F		4R	7365	161	215	34000	12280	9.00/20	9.75/20	Cum HB600	6-4⅞x6	672	17.	500	150-1800	7-4½x16½	Y	Own F54	5	Own RF1610	FB	HT	6.22-7.12*	Own F700	T6IA	801	1192	G	PX	84	10⅛x3⅞x⅜	T
♦ 139		...DR-426-F		4R	7590	161	233	42000	13280	9.75/20	10.50/20	Own FBB450A	6-4⅝x5	451	5.2	331	120-2400	7-2¾x11¾	Y	Own F54B	5	Own RF1701	2 FB	HT	6.52-10.9	Own F800	T6IA	801	1192	G	PD	84	11⅛x3⅞x⅜	T
♦ 140		(D)DRD-426-F		4R	9030	161	233	42000	14580	9.75/20	10.50/20	Cum HB600	6-4⅞x6	672	17.	500	150-1800	7-4½x16½	Y	Own F54B	5	Own RF1701	2 FB	HT	6.52-10.9	Own F800	T6IA	801	1192	G	PD	84	11⅛x3⅞x⅜	T
♦ 141		...AR-626-F		4R	12500	180	253	62000	18155	9.75/24	11.25/24	Own FEB	6-5x5½	648	4.4	460	140-2100	7-3¼x17¾	Y	Own H7	5	Own 1585	2 FB	HT	5.27-11.3*	Own F910	T6IA	102	1520	G	PD	92	14x3½x¾	TL
♦ 142		(D)ARD626F		4R	13485	180	253	62000	18300	9.75/24	11.25/24	Cum HB600	6-4⅞x6	672	17.	500	150-1800	7-4½x16½	Y	Own H7	5	Own 1585	2 FB	HT	5.97-11.39	Own F910	T6IA	102	1520	G	PD	92	14x3½x¾	TL
143		Ken-..(D)	509	4R	7046	212	254	35000	10350	9.00/20D	9.75/22	Cum HB4	4-4⅞x6	448	17.	335	100-1800	7-4½x11½	Y	Fu 5A620	5	Tim SW252	WF	R	6.20-9.25	Tim 35100	L6IHV	668	1192	a	TD	102	7½x3¼x1½	C
♦ 144		worth.(D)	510	2F	8697	221	247	39000	12630	9.00/22D	9.75/22	Cum HB6	6-4⅞x6	672	17.	500	150-1800	7-4½x16½	Y	BL 7641	4	Tim T18000	CF	R	6.04-10.5	Tim 36000	Ws4rIA	692	1030	a	TD	134	9¼x3¼x⅛	C
♦ 145		....(D)	512	4R	8334	205	235	38000	13500	9.00/20D	9.75/22	Cum HB6	6-4⅞x6	672	17.	500	150-1800	7-4½x16½	Y	BL 7641	4	Tim SW252	WF	R	6.20-9.25	Tim 36000	Ws4rIA	800	1194	a	TD	120	9¼x3¼x⅛	C
♦ 146		....(D)	520	2F	7886	214	239	40300	12200	9.00/20D	10.50/22	Cum HB6	6-4⅞x6	672	17.	500	150-1800	7-4½x16½	Y	BL 7641	4	Tim 75738	2F	H	6.85-9.41	Tim 36000	Ws4rIA	782	1158	a	TD	127	9¼x3¼x⅛	C
♦ 147		....(D)	522	2F	8061	214	239	46000	12150	9.00/20D	10.50/22	Cum HB6	6-4⅞x6	672	17.	500	150-1800	7-4½x16½	Y	BL 7641	4	Tim 76793	2F	H	6.02-9.2	Tim 36000	Ws4rIA	782	1158	a	TD	127	9¼x3¼x⅛	C
♦ 148		....(D)	523	4R	9149	214	239	42000	13700	9.00/20D	10.50/24	Cum HB6	6-4⅞x6	672	17.	500	150-1800	7-4½x16½	Y	BL 7641	4	Tim SW352	WF	R	5.40-10.2	Tim 36000	Ws4rIA	800	1194	a	TD	127	9¼x3¼x⅛	C
♦ 149		....(D)	524	4R	9410	214	239	54000	14700	9.75/20D	10.50/24	Cum HB6	6-4⅞x6	672	17.	500	150-1800	7-4½x16½	Y	BL 7641	4	Tim SW452	WF	R	6.0-11.7	Tim 36000	Ws4rIA	980	1450	a	TD	127	9¼x3¼x⅛	C
150		527		4R	5942	204	234	35000	11000	9.00/20D	9.75/22	Bud LO525	6-4½x5½	525	5.5	385	135-2200	7-3x11½	Y	Fu 5A-620	5	Tim SW-252	WF	R	6.20-9.25	Tim 35100	Ws4rIA	800	1194	a	TD	120	7½x3¼x1½	C
151		528		4R	7289	211	236	39000	12400	9.75/20D	10.50/24	Bud LO525	6-4½x5½	525	5.5	385	135-2?00	7-3x11½	Y	Fu 5A-620	5	Tim SW-352	WF	R	5.40-10.2	Tim 35100	Ws4rIA	800	1194	a	TD	127	7½x3¼x1½	C
152		....(D)	546	4R	6909	204	234	33500	10950	9.00/20D	9.75/22	Cum AA6	6-4x5	377	17.	270	100-2200	7-3?x	Y	Fu 5A-430	5	Tim SW252	WF	R	6.20-9.25	Tim 32502	L6IHV	636	1093	a	TX	120	7½x3¼x1½	C
153		556		4R	5429	204	234	35000	10750	9.00/20D	9.75/22	Her WXLC3	6-4¼x4¾	404	5.5	294	118-2800	7-2⅝x10½	Y	Fu 5A430	5	Tim SW252	WF	A	5.00-11.0	Tim 35100	L4rIHV	800	1194	a	TX	120	7½x3¼x1½	C
154		Marmon-Herr.																																						
155		.....	DSD200-6	*	5980	167	Op	19500	8065	7.00/20D	7.00/20	Her JXC	6-3¾x4¼	282	5.3	196	84-2800	7-2½x10½	N	Ful 5A33	5	Wis MH1100	2F	R	*-7.36	WH 110	L6IH	549	930	a	TX	84	7½x2½x¼	P
156		.....	DSD300-6	*	6700	167	Op	25500	9025	7.50/20D	8.25/20	Her JXD	6-4x4¼	320	5.3	224	95-2800	7-2½x10½	N	Ful 5A33	5	Wis MH1111	2F	R	*-7.66	WH 111	L6IH	600	1055	a	TX	84	7½x2½x¼	P
157		.....	DSD400-6	*	7700	158	Op	26500	9600	8.25/20D	9.00/20	Her WXC3	6-4¼x4½	383	5.0	260	106-2800	7-2⅝x13¼	Y	Ful 5A430	5	Wis MH1111	2F	R	*-9.33	WH 111	L6IH	600	1055	a	FD	72	9½x3x¼	P
158		.....	DSD500-6	*	9015	158	Op	32500	10400	8.25/22D	9.00/20	Her WXLC3	6-4¼x4¾	404	5.0	293	118-2800	7-2⅝x13¼	Y	Ful 5A430	5	TW MH1133	2F	R	*-9.33	WH 113	Ws6IA	726	1300	a	FD	72	9½x3x¼	P
159		.....	DSD600-6	*10570	173	Op	32500	12200	9.00/20D	9.00/20	Her RXB	6-4½x5¼	501	5.4	330	110-2200	7-3x13¼	Y	Ful 5A620	5	TW MH1133	2F	R	*-8.43	WH 113	Ws6IA	726	1300	a	FD	84	9½x3x¼	P
160		.....	DSD800-6	*11920	173	Op	42000	14475	9.75/20D	9,75/22

Line Number	MAKE AND MODEL	Chassis List Price	WHEEL-BASE Minimum Standard	WHEEL-BASE Maximum Standard	Gross Vehicle Weight for Normal Service	Chassis Weight (See definition)	TIRE SIZES Standard Front and Rear (D-dual rear S-single rear)	TIRE SIZES Maximum Authorized Tire Size (Duals unless noted)	ENGINE DETAILS Make and Model	No. of Cylinders, Bore and Stroke	Displacement	Comp. Ratio	Torque lb. ft.	Max. Brake H.P. at R.P.M. Given	Number, Diameter and Length Main Bearings	Governor Standard	TRANSMISSION Make and Model	Forward Sp'ds	REAR AXLE Make and Model	Gear and Type	Drive & Torque	Gear Ratio Range in High*	FRONT AXLE Make and Model	BRAKES SERVICE Make Location Type Operat'n	BRAKES SERVICE Lining Area	BRAKES SERVICE Drum Area	BRAKES SERVICE Drum Material	BRAKES Hand Location Type	C-A Dimension (Min. Std. W. B.)	FRAME Side Rail Dimensions	FRAME Type
1	Marmon-Herr.								Her HXD	6-5½x6	855	4.5	555	180-2200	7-3½x16½	Y	Ful 4A86	4	TW MH1144	2F	R	**-9.11	WH 114	W86IA	1056	1626 a	FD	96	10 x33x¾	P
2	Cont. DSD900-6	*14000	192	Op	42000	17590	9.75/20D	9.75/22	Her HXE	6-5½x6	985	4.5	610	198-2200	7-3½x16½	Y	Ful 4A86	4	TW MH1155	2F	R	**-9.11	WH 115	W86IA	1056	1626 a	FD	102	10 x33x¾	P
3	DSD1000-6	*16000	198	Op	52000	19200	10.50/20D	10.50/24	Her DJXB	6-3½x4½	260	14.	178	79-2600	7-3x10-¾	N	Ful 5A33	5	W MH1100	2F	R	**-6.66	WH 110	L61H	540	930 a	TX	84	7½x33x¼	P
(D)	DD8D200-6	* 7255	167	Op	19500	8465	7.00/20D	7.00/20	Her DJXC	6-3½x4½	298	14.	208	83-2600	7-3x10-¾	N	Ful 5A33	5	W MH1111	2F	R	**-6.41	WH 111	L61H	706	1300 a	FD	84	9½x33x¼	P
(D)	DD8D300-6	* 7975	167	Op	25500	9425	7.50/20D	8.25/20	Her DRXB	6-4⅜x5¼	474	14.	350	124-2200	7-3x13¾	Y	Ful 5A620	5	TW MH1133	2F	R	**-7.66	WH 113	W86IA	1056	1626 a	FD	84	10⅞x33x¼	P
(D)	DD8D600-6	*14375	173	Op	32500	12800	9.00/20D	9.00/20	Her DRXC	6-4⅜x5¼	474	14.	350	124-2200	7-3x13¾	Y	Ful 5A620	5	TW MH1144	2F	R	**-8.14	WH 114	W86IA	1056	1626 a	FD	96	10⅞x33x¼	P
(D)	DD8D800-6	*14375	173	Op	42000	15060	9.75/20D	9.75/22	Her DRXB	6-4⅜x5¼	474	14.	350	124-2200	7-3x13¾	Y	Ful 5A620	5	TW MH1144	2F	R	**-8.14	WH 114	W86IA	1056	1626 a	FD	102	10⅞x33x¼	P
(D)	DD8D900-6	*16650	192	Op	42000	18325	9.75/20D	9.75/22	Her DHXB	6-6x6	707	14.	530	176-1800	7-3¾x11⅞	Y	Ful 4A86	4	TW MH1144	2F	R	**-8.14	WH 114	W86IA	1056	1626 a	FD	102	10⅞x33x¼	P
(D)	DDSD1000-6	*18400	198	Op	52000	19950	10.50/20D	10.50/24	Her DHXB	6-6x6	707	14.	530	176-1800	7-3¾x11⅞	Y	Ful 4A86	4	TW MH1155	2F	R	**-8.14	WH 115	W86IA	1056	1626 a	FD	102	10⅞x33x¼	P
.....	(c) JJ5-6	* 2670	156	180	22000	5474	6.00/20D	10.50/18S	Ford V8	8-3⅛x3¾	239	6.1	170	95-3600	3-2.5x5½	N	Ford	4	Tim Ford	2F	R	**-6.67	Own IX4-11	FO61H	503	836 ac	TX	106	7½x33x¼	TL
.....	(c) JJ6-6	* 2717	180	180	22000	5595	6.00/20D	10.50/18S	Ford V8	8-3⅛x3¾	239	6.1	170	95-3600	3-2.5x5½	N	Ford	4	Tim Ford	SF	R	**-6.67	Own IX4-12	FO61H	503	836 ac	TX	115	7½x33x¼	TL
(c)	(c.o.e.) JJ5-6	* 2899	156	156	22000	5508	6.00/20D	8.25/18	Ford V8	8-3⅛x3¾	239	6.1	170	95-3600	3-2.5x5½	N	Ford	4	Tim Ford	SF	R	**-6.67	Own IX4-12	FO61H	503	836 ac	TX	139	7½x33x¼	TL
(c)	(c.o.e.) JJ6-6	* 2940	180	180	22000	5630	6.00/20D	8.25/18	Ford V8	8-3⅛x3¾	239	6.1	175	95-3600	3-2.5x5½	N	Ford	4	Tim Ford	SF	R	**-6.67	Own IX4-12	FO61H	503	836 ac	TX		7½x33x¼	TL
	Sterling																															
	(16)BBT128 2C		4840	181	227	32000	10625	9.00/20D	9.75/20	Wau 6MZR	6-4¼x4¾	404	5.3	286	99-2400	7-2⅝x12⅛	Y	Fu 5A430	5	TimSBT252H	SF	L	5.57-7.80	Tim 35000N	L4rIHV	504	908 a	TX	102	9x33¼x¼	D
	(15-16)BW5128 4R		5325	181	227	32000	10775	9.00/20D	9.75/20	Wau 6MZR	6-4¼x4¾	404	5.3	286	99-2400	7-2⅝x12⅛	Y	Fu 5A430	5	TimSW251H	WF	L	6.20-10.40	Tim 35000N	W84rIA	504	908 a	TX	102	9x33¼x¼	D
	(15-16)BW5160 4R		8165	201	241	40000	12775	9.75/20D	10.50/20	Wau6SRKR	6-4⅜x5½	517	5.5	368	125-2300	7-3x13¾	Y	Fu 5A62	5	TimSW352W	WF	L	6.00-10.67	Tim 29452N	W84rIA	800	1348 a	TX	122	9x33¾x¼	D
	(15-16)HWS2584R		9090	201	241	50000	13575	10.50/20D	10.50/24	Wau6SRKR	6-4⅜x5½	517	5.5	368	125-2300	7-3x13¾	Y	Fu 5A62	5	TimSW452W	WF	L	6.00-10.25	Tim 27432N	W84rIA	800	1348 a	TX	122	9x33¾x¼	D
	(16)HCS235 4R		10820	211	251	52000	15250	9.75/22D	10.50/24	Wau6SRKR	6-4⅜x5½	517	5.5	369	125-2300	7-3x13¾	Y	Fu 5A62	15	OwnSR25W	CD	R	10.73-13.25	Tim 27432N	W84rIA	808	1308 a	JX	123	9x33¾x¾	D
	(16)HCS265 4R		12350	211	251	60000	16400	10.50/20D	11.25/24	Wau 6RBR	6-5x5¾	677	5.3	492	152-2200	4-3⅜x11	Y	Fu 4B86	12	OwnSR265W	CD	R	10.76-13.56	Tim 27432N	W84rIA	988	1552 a	JX	123	9x33¾x¾	D
	(16)HCS297 4R		13850	211	251	70000	18300	10.50 24†S	11.25 24†S	Wau 6RBR	6-5x5¾	677	5.3	492	152-2200	4-3⅜x11	Y	Fu 4B86	12	OwnSR330W	CD	R	10.76-15.37	Tim 27451N	W84rIA	988	1552 a	JX	99	12x33½x¾	Y
	(16)HCS330 4R		15200	160	180	80000	20100	10.50 24†S	11.25 24‡S	Wau 6RBR	6-5x5¾	677	5.3	492	152-2200	4-3⅜x11	Y	Fu 4B86	12	OwnSR330W	CD	R	10.76-15.37	Tim 27451N	W84rIA	988	1552 a	JX		12x33½x¾	Y
	Trucksteel																															
21	(c)TRC-2X400 2F		1859	157	218	26000	6100	7.50/20xD	8.25/20	Chev	6-3½x3¾	235	6.6	192	93-3000	4-3¼x5½	N	Chev	4	Eat 1465	SFd	H	6.5-9.02	Chev	B6IHV	511	729 a	2I	83	7½x33x¼	C
22	(c)TRC-2X400 2F		2113	154	204	27000	6250	7.50/20xD	8.25/20	Chev	6-3½x3¾	235	6.6	192	93-3000	4-3¼x5½	N	Chev	4	Eat 1465	SFd	H	6.5-9.02	Chev	B6IHV	511	729 a	2I	83	7½x33x¼	C
23	(c)TRC-4XC26C 4R		2114	141	212	21000	6500	7.50/20xD	8.25/20	Chev	6-3½x3¾	235	6.6	192	93-3000	4-3¼x5½	N	Chev-0	8	Chev	SFd	H	**-6.4	Chev	C61HV	511	729 a	2I	66	7½x33x¼	C
24	(c)TRC-4XC27C 4R		2363	116	180	27000	6680	7.50/20xD	8.25/20	Chev	6-3½x3¾	235	6.6	192	93-3000	4-3¼x5½	N	Chev-0	8	Chev	SFd	H	**-6.4	Chev	C61HV	511	729 a	2I	71	7½x33x¼	C
25	(c)TRF-2X250 2F		1694	155	252	22000	5900	7.00/20xD	8.25/20	Ford	8-3⅛x3¾	239	6.2	170	95-3600	3-2.5x4.7	N	Ford	4	Eat 1350	SFd	H	5.83-8.57	Ford	F61HV	501	836 a	TX	81½	7½x33x¼	C
26	(c)TRF-2X400 2F		1837	156	253	26000	6050	7.50/20xD	8.25/20	Ford	8-3⅛x3¾	239	6.2	170	95-3600	3-2.5x4.7	N	Ford	4	Eat 1460	SFd	H	6.5-9.02	Ford	F61HV	501	836 a	TX	83	7½x33x¼	C
✦ 27	(c)TRF-2X400 2F		1969	152	242	27000	6250	7.50/20xD	8.25/20	Ford	8-3⅛x3¾	239	6.2	170	95-3600	3-2.5x4.7	N	Ford	4	Eat 1350	SFd	H	5.83-8.57	Ford	F61HV	501	836 a	TX	81½	7½x33x¼	C
✦ 28	(c)TRF-2X400 2F		2162	133	212	27000	6600	7.50/20xD	8.25/20	Ford	8-3⅛x3¾	239	6.2	170	95-3600	3-2.5x4.7	N	Ford-0	8	Ford	SFd	H	6.88-7.87	Ford	F61HV	501	836 a	TX	67¼	7½x33x¼	C
✦✦ 29	(c)TRF-4XF29E 4R		2455	143	210	29000	7200	7.50/20xD	8.25/20	Ford	8-3⅛x3¾	239	6.2	170	95-3600	3-2.5x4.7	N	Ford-0	8	Eat 1350	SFd	H	6.88-9.56	Ford	F61HV	501	836 a	TX	77¼	7½x33x¼	C
30	(c)TRF-4XF27F 4R		2452	117	180	27000	6720	7.50/20xD	8.25/20	Ford	8-3⅛x3¾	239	6.2	170	95-3600	3-2.5x4.7	N	Ford-0	8	Ford	SFd	H	6.88-7.87	Ford	F61HV	501	836 a	TX	67¼	7½x33x¼	C
31	(c)TRF-4XF30E 4R		2738	117	180	30000	7380	7.50/20xD	8.25/20	Ford	8-3⅛x3¾	239	6.2	170	95-3600	3-2.5x4.7	N	Ford-0	8	Eat 1350	SFd	H	6.88-9.56	Ford	F61HV	501	836 a	TX	77¼	7½x33x¼	C

† Rear 11.25/24. †† Rear 12.00/24. ‡ Rear 12.75/24. ‡‡ Rear 13.50/24. x Front 7.00/20. ♦ Denotes new model or change in specifications. * Prices include chassis and cab.

A LETTER TO THE EDITOR

To the Editor of
Commercial Car Journal:

I enjoyed reading the article, "Looking at Oil Through Specs," that appeared in the October issue of Commercial Car Journal, but I wonder if there are not a few points that are debatable.

The first is the statement that "If vehicles are run continuously and stored in heated garages, there should be no objection to going to a heavier oil to combat consumption." Oil has the dual function of removing heat from the operating parts and lowering friction between those parts. Naturally, with a definite bearing clearance and a set temperature, the flow of lubricant through a bearing is at a definite rate. If a heavier oil is used, the rate of flow is less and the heavier oil cannot remove heat as fast as the lighter. Consequently, there is a definite rise in bearing temperature. If the bearing happens to be operating at a fairly high temperature, this increase in heat may be enough to materially increase the speed of fatigue failure particularly in babbitt bearings. Then again some engines of the Diesel type which rely on a stream of oil on the "waffle" of the piston for cooling may have their piston temperatures running sufficiently higher with the use of heavier oil to cause coking under the piston and early ring sticking in the slots. Heavy oils when used in high-speed engines sometimes cause a riding action of the oil ring in contrast with the scraping action for which they were intended.

The second point is on viscosity index. Like the scale for octane number measurement, the original scale for viscosity indices has been outgrown. There are oils on the market whose indices are as high as 125. The value of an oil with an index of 125 over one whose index is 100-110 is questionable.

The stress placed on pour point, I believe, is very often misplaced. The question as to whether a motor will start in cold weather is dependent on the viscosity of the oil at starting temperature—not on pour point. It is possible to have an oil that will pour at, say, —15 deg. F. but will not allow a car to start at 0 deg. F. At the same time with the use of an oil with a —5 deg. F. pour may allow the motor to turn over fairly easily. Some engines will require an oil of 25,000 seconds or less viscosity to start, while others may be capable of starting with oils of 75,000 seconds viscosity. Naturally clearances play an important part here.

If we assume that SAE 30 and SAE 40 are the most widely used summer oils in present-day equipment, I believe that your average pour point is about 10 deg. high.

C. O. French, Jr.,
Pittsburgh, Pa., Oct. 11.

Motor Truck Red Book

A new and completely revised addition of *The Motor Truck Red Book* came off presses of the Traffic Publishing Co., Inc., 110 Sixth Ave., New York, N. Y., early last month. Best summarized in the publishers' own words, the book is "an encyclopedia of laws, rules, regulations, principles and practices of motor truck transportation." 900 pages. $10.00 per copy.

OBJECT LESSONS IN TRUCK ABUSE

(Continued from Page 28)

planning to use this same technique, a little later on, on purely safety subjects.

"Now here is the first presentation made at a driver meeting, and following it is the questionnaire based on it:"

Gentlemen:

We sometimes wonder if you realize the confidence our company has placed in you and your ability, not only to sell and deliver our products, but in placing a very expensive piece of modern automotive equipment in your care, expecting it to be used normally and as if it were your own.

Some drivers realize this, but our experience has proven to us that a good many do not take this angle seriously enough and do not fully understand all their responsibilities as well as their duties.

We understand that all breakdowns, mechanical failures, etc., are not due to poor driving or rough handling but a good percentage of our extraordinary maintenance expense is attributed to the latter.

You can be of great assistance to us in keeping our maintenance costs to a minimum if you will just cooperate with us and keep in mind the object lessons we are about to show you.

The illustrations have been made from actual conditions in our division, and we feel that you men cannot help but agree that the company is entitled to more and better consideration on your part.

We do not wish to be too critical but we feel that this talk is very constructive. In fairness to all, and to prove our points to you, we intend in the future to bring all such abnormal conditions up at the drivers' meetings.

1. Cracked Transmission Case

Here is example of poor head work, lack of judgment and consideration for other people's property. This transmission case is very expensive, and aside from the casting itself, all contact surfaces have to be milled.

The case was not only cracked but many of the internal parts were badly damaged by misalignment due to the break which allowed the shafts, gears and bearings to run out of true, causing excess wear and strain.

The vehicle from which this case and parts were taken slid off the hard roadway and became mired in a soft muddy spot. Trying to get out, the driver buried his right rear wheel deeper and instead of calling the shop for help or a tow he kept rocking and jerking the vehicle, snapping the clutch in and out, and when he did finally jerk the truck out of the mud he found himself still stuck (although now on the hard road) because he wrecked the entire transmission. Assistance or a tow would not have cost more than $15.00, whereas this inexcusable operation cost $276.50. It might have been some other part or unit that could have failed.

In such instances as this it does not pay to be too smart, call for help and you will get it at a much lower cost than $276.50.

2. Broken Spring Hanger

The same story applies here as explained on number 4, below.

3. Cracked Brake Drum

The modern heavy duty type brake drums are a distinct advancement over the old steel drums of a few years ago. They are made to withstand tremendous heat and pressures and will give long life if given a fair chance. Drum replacements are very expensive and should give 100,000 miles of life under normal conditions. When they don't, we know there is something wrong. Aside from the mechanical angle, you men can help increase the life of your brakes and drums by being a little more considerate in your applications.

Avoid sudden or speed stops, do not fan your pedal, and use better judgment when anticipating a complete stop. If you would just stop a minute and consider the number of times per day you push the old brake pedal, and the hard and important job it does, you would, I know, be a little more considerate to the brake system and be less leg weary yourselves at the end of the day.

4. Broken Rear Spring

Spring breakage is costly and aside from mechanical reasons you men can help a great deal to keep this cost to a minimum by avoiding chuck holes in roads and driveways, slowing down to reasonable speeds on bumpy highways, and avoiding obstructions. Braking the vehicle normally will avoid sudden stops, which cause a rocking action, weakening the springs.

5. Damaged Transmission Gears

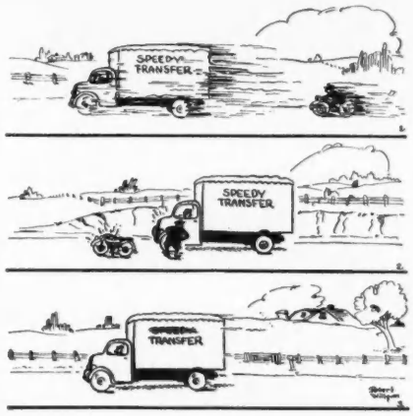
This ties in somewhat with the bent shift lever shown in No. 11 and gives you an idea how corners of gear teeth look when they have been broken or chipped by gear clashing. As I stated before, this is another good example of careless, rough-shod handling of a truck.

Be more considerate and report to the shop any trouble with your shifting mechanism, clutch, etc. This is money saved for the company and protection for yourself.

6. Damaged Bendix Drive and Starter Armature

This condition shown is very common and costly. The abuse the flywheel gear gets as a result, in most cases, runs into a very expensive job. It means the removal of transmission, clutch and flywheel to install a new gear plus the expense of the starter damage. In most cases it is caused by re-engaging the starter while the engine is running and before the engine has come to a complete stop.

The Bendix gear (which is hard) chews the flywheel teeth, breaks the Bendix drive



which locks and springs, and bends the armature shaft, causing the armature to drag on the field coils which in turn break and shred the armature winding, resulting in what you see before you. Be very sure your engine is at a complete stop before re-engaging the starting motor and you will save the company considerable money and avoid the use of the old time Armstrong starter (crank handle).

7. Bent Steering Cross Rod

Aside from front end accidents there is no excuse for the bending of steering gear cross or tie rods. Many times while doing our various group service inspections and work, our mechanics or contract shop men find these rods bent. There are only two good reasons why this happens, either by hitting obstructions in driveways and/or roadways, or banging wheels up against curbstones. Neither reason is excusable and both are the result of careless driving. Besides the tie rod damage, it makes the truck unsafe for driving and causes tire misalignment, which means uneven and excess wear. So you see, all things taken into consideration, it is a costly and dangerous practice. Please, in the future, be more considerate of these seemingly small details.

8. Burnt Clutch Facing

I guess at times most all of us are guilty of riding the clutch pedal until we finally wake up to this fact and remove the foot. I will admit it is a comfortable place to rest the hoof, but we must not forget that there is a leg attached to it, and it, for some reason, has a tendency to press downward. In its unconscious state it (the leg) has no brains, therefore the clutch is depressed and allowed to slip. Multiply these unconscious movements per day or week up to a seasonable time and the result is perfect (burned clutch facings), and maybe a warped plate, distorted fingers from the tremendous heat generated in the clutch through the medium of a brainless foot and an unconscious leg.

This job was well done as you can see, so please educate the foot, and by so doing the leg will act normally.

Ignorance and forgetfulness are the two common reasons for this condition, but we also realize that normal wear calls for clutch adjustments, so if your clutch acts peculiar, be sure and call the shop, don't take a chance on doing serious damage.

(Turn to Next Page, Please)

(CONTINUED FROM PAGE 57)

9. Damaged Engine Fan

This picture illustrates again the costly effect of carelessness and was caused by leaving the engine hood up, improperly fastened while the engine was running. The hood dropped and the edge struck the revolving fan, gouging and bending fan so blades cut through radiator core before engine was stopped.

The best way to avoid these costly conditions is never to leave engine hood up while motor is running without first definitely making sure the hood is properly supported.

10. Broken Axle Shaft

The average driver feels that a broken axle shaft is no fault of his. Directly he is correct, but he can be partly responsible indirectly.

The shaft shown is a good example and was factory tested for fractures, flaws, hardness, toughness, etc., and found to be up to all standards and able to stand the normal amount of torque applied to it.

In this case it could have been broken by rocking of truck, or sudden clutch engagement but investigation proved different.

The truck in which this axle broke was traveling along at normal speed on a slippery highway approaching a down grade. The down grade was dry and when the driver hit this dry spot he felt his truck slow up quickly and at the same time heard a snap, but thought nothing of it. About two miles further on he went through the same conditions and again a snap, but this time he did not continue on his way, because the axle shaft snapped, therefore he was powerless and had to pull to a stop.

What happened was evidently this: On wet or slippery roads the traction is poor, so the drive wheels spin faster than they propel the truck and overrun the engine speed, so that when a dry spot is suddenly contacted by the rear wheels, a severe jolt is noticed and this jolt applies a tremendous strain and twisting action on the axle shaft, far greater than normal torque allows.

Shafts do not generally let go like this after one or two shocks, but each additional shock, whether it is five or 50, will all multiply and keep weakening the shafts which eventually twist, fracture, then break.

This condition can be greatly relieved if the speed is cut down to a fair margin when traveling over wet or slippery roads. Do not attempt to tow a truck until broken sections have been removed, otherwise you will ruin everything.

11. Bent Gear Shifting Lever

You may feel that this next condition is impossible, but it was an actual condition, and a brutal one to say the least. Any man who uses physical strength to engage transmission gears with the results shown here should be driving a horse and wagon, not an expensive piece of motor equipment.

In this case the vehicle clutch went bad, and instead of calling the shop for assistance he decided to finish his deliveries, then bring the truck in. The constant forcing of this lever not only bent it and the inside shifting fork, but chipped the corners off the teeth of all forward speed and reverse gears.

This inconsiderate and brutal treatment at the hands of this driver cost the company exactly $165.56. When questioned, the driver retorted, "I just got mad at the damn thing, because it would not shift and I was late on my route." The outcome of this case, gentlemen, is obvious, and I wish to tell you this particular driver has had lots of time on his hands to stay mad with everything and everybody including himself. Don't you get mad like this fellow did, because it is too costly in more ways than one.

12. Broken Carrier Housing

Practically all of our vehicles up to 2 tons have the single reduction bevel gear drive contained in a housing the same as shown here, and naturally are not as heavy or husky as the units used in our larger trucks. For this reason it is natural to assume they are not built to stand an abnormal amount of abuse. Therefore too much torque applied by hard clutch usage or severe strain when vehicle is stuck will, without doubt, fracture the pinion bearing carrier which eventually progresses to the main case, causing a break. Avoid such conditions by careful reasoning.

(TURN TO PAGE 60, PLEASE)

HOW TO AVOID DRIVER ARGUMENTS *with Facts*

"There are the facts on the wall, boys! And each truck wrote its own record."

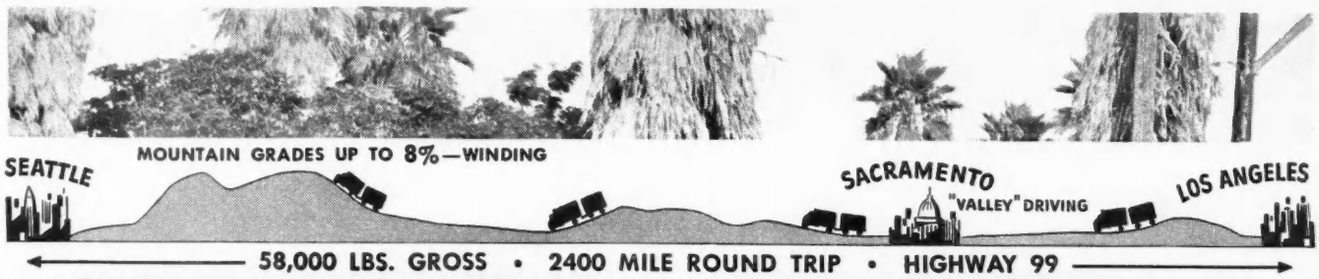
HOW do you manage *your* trucks? The Easiest Way is also the most effective: *"Let the trucks speak for themselves."* Let each truck "write" its own story of the day's work; and then hang the story (the chart) on a peg on the wall, up where everybody can see it.

These charts came out of *Servis Recorders*—they show just when each truck was running, when it left the garage, how long it waited for the load, how long it stood idle, when it quit—in fact the whole story of the day's work.

That information assures a trucking system where nobody argues, where nobody is suspicious of anybody else, where everyone is treated fairly and everyone is treated alike. It pays. Send for booklet—*"Ten Ways of Getting More Work Out of Motor Trucks."*

THE SERVICE RECORDER COMPANY
1375 Euclid Avenue • Cleveland, Ohio

The Servis Recorder
Tells Every Move Your Truck Makes



"Colletti has six units like this. On descending long grades, compression is not always adequate for safe travel and brakes are partially set. There is need for an emergency brake that keeps cool. Then there is the city traffic—over 60 miles per round trip in Los Angeles alone—and in this traffic there is also likelihood of emergency application to *stop* the 58,000 lbs. of gross load."

—from a letter received October 4th, 1940

THE TRU-STOP "VENTILATED" DISC MAKES TRU-STOP EMERGENCY BRAKES SERVE BETTER AND LAST LONGER

YOU, TOO, WANT AN EMERGENCY BRAKE THAT KEEPS COOL... *and One to Stop the Load in Emergency*

And the same reasons that guided Kenworth, the seller, and Colletti, the owner of this fleet, should be the only ones you need to consider today.

With TRU-STOP EMERGENCY BRAKES installed, your equipment can be stopped safely from any speed. You can depend on it always. It won't fail you. Linings will last longer. And your brake maintenance bills will be less than with other brakes. Your equipment can be controlled more safely on steep grades with the least possible wear on brake lining—because of the TRU-STOP VENTILATED DISC.

Write us for easily understood details of application of TRU-STOP EMERGENCY BRAKES to the propeller shaft of your own trucks.

AMERICAN CABLE DIVISION • 12-252 General Motors Bldg., Detroit, Michigan • San Francisco: 630 Third Street

AMERICAN CHAIN & CABLE COMPANY, Inc.

When writing to advertisers please mention Commercial Car Journal

(CONTINUED FROM PAGE 58)

13, 14, 15. Differential Gears—Damaged

The next three illustrations, 13, 14 and 15, will again bring out clearly the disastrous effect, hard usage, abuse, carelessness, ignorant clutch snapping, excess braking, rocking, etc., have on a motor truck.

Number 13 shows a broken differential countershaft; number 14, three different makes of differential pinion gears, and number 15, a double-reduction differential gear cluster, all of which were caused by one or more of the reasons mentioned.

We again want to impress upon you that we know there are, at times, mechanical reasons for this type of failure, but there is also a good portion that can be charged against the abusive and "don't give a damn" driver.

We feel we have a few of this type among us and we are taking this means, which is constructive, to educate this class, so they may overcome their failings without our resorting to drastic measures.

Abnormal Tire Wear

One of the important responsibilities you men have in regard to your vehicle is the inflation and checking of your tires. Tires represent one of the heaviest expenses we have. In 1939 we spent $50,932.64 for tire and tube repairs, retread, recaps and replacements, which you will agree is not small change. Air is cheap if used, it is always available and gages and pressure charts are furnished you. There is no excuse for soft tires.

The second or third shift drivers should never take the first man's word that the tires have been checked; he may get in trouble by so doing.

This operation of inflating tires is equally important as putting oil in the crank case or filling the radiator with water. It is true your tires are double checked by our own mechanics or contract garages and automotive supervisors, but do not forget this is your own direct responsibility and from now on is going to be checked closer and more often than ever.

Tire abuse is bad enough with properly inflated tires, but imagine the punishment and damage that would take place if the tires were soft. It may not blow out at the moment but it is sure the cords would be ruptured, causing internal progressive breaks in the carcass and then in short time blow out or be damaged beyond sectional repairing, retreading, etc. A tire can easily be a total loss to us before it has earned its cost.

Curb abuse is one of the most common and easy ways to ruin any tire new or old and is inexcusable along with being very costly. When tire side walls are cut or gouged, the piece which tears out takes a layer of cord with it, and you cannot imagine the speed with which this spot weakens the other layers of cord and fabric.

It is true when we state that none of you men would ever think of abusing your own personal tires this way.

The average person says to himself, "Those are husky tires, lots of rubber in them, they should stand a lot of banging around," but do not forget, tires are the same as ourselves or anything else that is made to be normally used, they will only take and stand just so much abuse, then they pass out.

We appreciate the fact that uncontrollable conditions will crop up, but the conscientious and smart driver checks his tires, not only during the day but when he completes his shift. He looks for nails, glass, cuts, bruises, wheel misalignment, as well as inflation and reports any unusual condition on his daily report form.

Driver's Daily Vehicle Report

Last, but very important, there is form 3296, the "Daily Report of Automotive Vehicle."

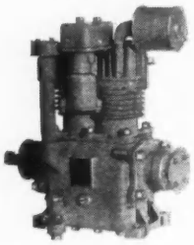
This form is simple and brief but covers about everything which pertains to the truck and must be made out each day by every driver on all shifts leaving a plant, even if it is only for a short trip. It not only serves for shop use but is good protection for you.

This report is required even if everything is O. K. We have had considerable trouble at some locations in getting these reports made out and turned over to the shop men for follow-up on the trouble you outline, so please, in the future show a better spirit of cooperation.

(TURN TO PAGE 62, PLEASE)

3 IMPORTANT FEATURES
YOUR AIR BRAKES SHOULD HAVE

1. DOUBLE AIR CAPACITY



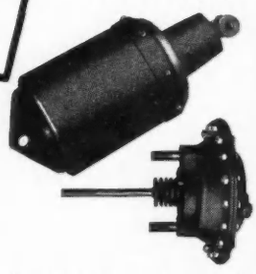
You need the extra reserve power supplied by this big 7.3 cu. ft. self-lubricated compressor, especially in city traffic and on hilly roads.

You Get All Three In
MIDLAND
AIR BRAKE
EQUIPMENT

2. PERFECT CONTROL

Operator can release any desired amount of air pressure without fanning the pedal, due to fully compensating foot control valve.

3. SUPER POWER



When a quick stop may save a life—or a cargo—you can depend on Midland's power units, either cylinders or diaphragms.

● For greater dependability and economy, specify Midland Air Brake Equipment. Complete KITS are also available for Ford, Dodge, Chevrolet, G.M.C. and International trucks, tractors, and buses. See your nearby Midland distributor today or write us direct for complete information and prices.

THE MIDLAND STEEL PRODUCTS CO.
10605 MADISON AVENUE • CLEVELAND, OHIO
Export Department: 38 Pearl St., New York City

MIDLAND POWER BRAKE EQUIPMENT
MIDLAND (CHRISTENSEN) Power Brakes
SAFETY POWER

Only HEIN-WERNER HYDRAULIC JACKS HAVE THE NEW "HEINITE" PUMP PISTON... GUARANTEED TO STAND UP IN SERVICE TEN TIMES AS LONG AS PISTONS PREVIOUSLY USED

Line covers a complete range —1½ tons to 20 tons capacity.

HEIN-WERNER Car and Truck Jacks set standard of comparison for advanced engineering, performance and LOW PRICE

Make tests and comparisons, and you'll agree that Hein-Werner Hydraulic Jacks are tops.

The "HEINITE" piston is an *exclusive* feature, and the superiority of design and performance of this piston is such that we guarantee that it will stand up in service at least ten times as long as pistons previously used.

All jacks in this outstanding line have a leak-proof hydraulic unit, are compact, sturdy, factory tested at 1½ times rated capacity, and *amazingly easy to operate.*

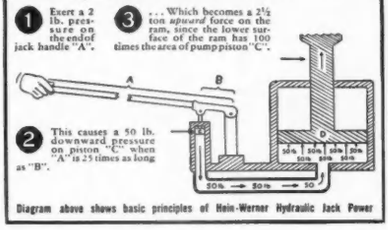
Complete line includes four models of Bumper-Lift Hydraulic Jacks for passenger cars. Also a 1½ ton capacity hydraulic jack at only $2.80 . . . 2 ton model, $2.95 . . . 3 ton model, $6.95 . . . 5 ton, $8.95 . . . 8 ton, $11.75 . . . 12 ton, $17.50 . . . 20 ton, $30.00. (All prices are net to dealer, and slightly higher on West Coast).

Hein-Werner also makes a full line of Service Jacks of 1¼, 1½, 2, 3 and 4 tons capacity, and SAFE-T's (non-adjustable horses) in 5 and 10 ton capacities.

HERE'S WHY H-W HYDRAULIC JACKS *are easier to operate*

In a split-second, mere finger pressure is transformed into a lifting force of several tons

1. Exert a 2 lb. pressure on the end of jack handle "A".
2. This causes a 50 lb. downward pressure on piston "C" when "A" is 25 times as long as "B".
3. . . . Which becomes a 2½ ton *upward* force on the ram, since the lower surface of the ram has 100 times the area of pump piston "C".


A
B
C
D
50 lb.
50 lb.
50 lb.

(CONTINUED FROM PAGE 60)

These reports are very important to us, not only from your end, but the shop as well, because they use this means for keeping their mileage record boards and vehicle books up-to-date.

Closing

We could go on for hours talking on this important subject but time does not permit. In closing we again ask your whole-hearted cooperation and we feel that you now better realize the important part you men play in a general way and not only as drivers or tank truck salesmen.

The best way for a man to prove his usefulness to the company and himself lies in his ability to cooperate with his fellow employees and to realize and appreciate the confidence placed in him.

Driver Questionnaire No. 1

It is desired that all drivers fill in this questionnaire subsequent to talk delivered by a representative of the Automotive Section. Drivers are at liberty to consult the mimeographed outline of the above talk, or any other source of information.

The sole purpose of this questionnaire is that of fixing permanently in the minds of all driver personnel a better understanding of the costly and unsafe effects of improper handling of the vehicle.

Please return within two weeks to plant office.

(1) **GENERAL**
- (a) What was the general purpose of this talk?

(2) **ABNORMAL TIRE WEAR**
- (a) What must you do to help reduce tire costs?
- (b) What is your direct responsibility in regard to tires?

(3) **TIRE ABUSE**
- (a) Name four causes of tire abuse.
  1. .....
  2. .....
  3. .....
  4. .....

(4) **CURB ABUSE**
- (a) What happens to the tire as a result of curb abuse?

(5) **BENT STEERING CROSS ROD**
- (a) What effect does the above have on the front end of the vehicle?
- (b) How can this condition be avoided?

(6) **ENGINE FAN**
- (a) Name two ways of avoiding fan damage.

(7) **BROKEN BENDIX DRIVE AND STARTER ARMATURE**
- (a) What damage may result from engaging the starter while the engine is running?

(8) **BENT GEAR SHIFTING LEVER**
- (a) What is the common sense thing for the driver to do when transmission shifts hard and causes gear clashing?

(9) **CRACKED TRANSMISSION CASE**
- (a) Under what circumstances can a transmission case be cracked by bad driving practices?

(10) **DAMAGED TRANSMISSION GEARS**
- (a) Under what circumstances can transmission gears be damaged by bad driving practices?

(11) **BURNT CLUTCH FACING**
- (a) Name two common reasons for this condition (see mimeograph of talk dated 6-3-40).
- (b) What is the proper position of the left foot while driving?

(12) **BROKEN AXLE SHAFT**
- (a) Name at least two improper driving practices which may contribute to the breakage of an axle shaft.
- (b) After a shaft has broken, what precautions must be observed before permitting vehicle to be towed?

(13) **BROKEN REAR SPRING**
- (a) What can driver do to minimize spring breakage?

(14) **BROKEN SPRING HANGER**
- (a) What bad driving practices might contribute to a broken spring hanger, broken spring, and even a twisted chassis frame?

(15) **BROKEN CARRIER HOUSING**
- (a) What bad driving practice may contribute to breakage of a carrier housing?

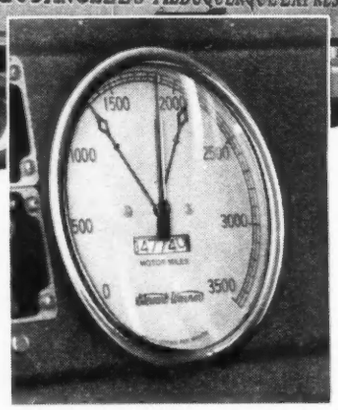
(16,17 and 18) **DIFFERENTIAL GEARS—DAMAGED** (Three pictures)
- (a) Did the pictures shown clearly illustrate the damage which can be caused? Yes..... No.....
- (b) Name several causes of this damage.

(19) **CRACKED BRAKE DRUM**
- (a) What can drivers do to keep this trouble to a minimum?

(20) **DRIVERS DAILY VEHICLE REPORT**
- (a) Specifically why is it important that this form be filled in accurately, completely and promptly? (Answer this question in considerable detail).

SIGNED .....
STATION..... DATE.....

STEWART-WARNER MOTOR MILE TACHOMETERS *REDUCE OUR OPERATING COSTS—HELP DRIVERS BY ELIMINATING GUESSWORK—ASSIST IN DETERMINING SERVICE PERIODS!*



This close-up of an actual Motor Mile Tachometer installation on one of the Los Angeles-Albuquerque trucks plainly shows the two red pointers which indicate maximum and minimum efficient engine speeds, eliminating guesswork for driver.

Los Angeles-Albuquerque Express Covers Two Million Miles a Year Over All Types of Roads and Grades

"We operate 53 pieces of equipment over the Los Angeles-Albuquerque-Denver run, a distance of 1350 miles, or a total of more than 2,000,000 miles per year. We encounter all types of roads and grades, including one elevation of 7400 feet and another of 7900 feet.

"The use of Stewart-Warner Motor Mile Tachometers on this equipment *has reduced our operating costs* by giving our drivers an indicator to tell them what the engine is doing at all times. Drivers say the red pointers on the dial assist materially in their driving and permit them to relax because it *eliminates guesswork* as to whether the motor is lugging or overspeeding. They also say the tachometer is a great help in gear shifting.

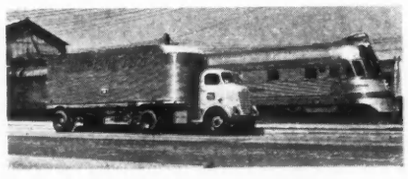
"The motor mile feature also *assists us in determining the proper service periods* as our motors operate considerably in excess of the miles shown on the speedometer."

G. C. Lebeck, *Los Angeles-Albuquerque Express*

STEWART WARNER
MOTOR MILE TACHOMETER
STEWART-WARNER CORPORATION
1876 Diversey Parkway • Chicago, Ill.

STEWART-WARNER CORPORATION
1876 Diversey Parkway, Chicago, Ill., Dept. L
I am operating....trucks. Please tell me all about the Stewart-Warner Motor Mile Tachometer.

Name.....
Address.....
City.....*State*.....
Firm Name.....



The Burlington's new stainless steel Fruehauf trailers are worthy companions of its handsome Zephyr trains.

Ready for your Toughest Jobs right from the Start!

● There's a reason why the Ford Motor Company has built *and sold* more trucks than any other manufacturer. It's because Ford units give a full measure of service right from the start.

● For example, you get *full value* from your new Ford Truck the very moment you put it to work on your job. Its precision-built engine does *not* have to be "broken in"! By the time the first 100 miles have clicked across the speedometer, you can drive your unit as fast as the law and road and traffic conditions permit. No "coddling" here. Your new Ford Truck pays dividends from the day you take delivery.

● Because of rugged construction, performance and dependability, you can count on Ford operating economy.

● Put a Ford Truck to work for you in 1941! Ask your dealer for a *free* "on-the-job" test that will prove what a Ford unit can do for you under *your own* operating conditions.

FORD V-8 TRUCKS and Commercial Cars

FORD MOTOR COMPANY • BUILDERS OF FORD V-8 AND MERCURY CARS, FORD TRUCKS, COMMERCIAL CARS, STATION WAGONS AND TRANSIT BUSES

Ford

When writing to advertisers please mention Commercial Car Journal

NEWSCAST (Continued from Page 46)

Guiberson Gets Diesel Contract

A contract for $3,888,705 worth of radial diesel engines to be used in powering light U. S. Ordnance tanks has been awarded the Guiberson Diesel Engine Co., Chicago, by the Rock Island Arsenal. The engines will be manufactured by the Buda Engine Co. at Harvey, Ill., under an exclusive manufacturing agreement. The order brings even the newest Buda plant up to full capacity for the entire year of 1941.

Getting Personal

Henry E. Hund has been elected president and general manager of Reo Motors, Inc., succeeding Col. Fred Glover, who resigned several months ago. Mr. Hund was an executive of the Briggs Mfg. Co. for 15 years, serving at one time as vice-president and general manager.

Robert M. Clough of Bronxville, N. Y., is the new manager of Shell Oil Co.'s plant and automotive department. Former assistant manager of Operations department in the Atlantic Coast territory, Mr. Clough will direct all phases of bulk depot, water terminal and delivery operations east of the Rocky Mountains. The appointment is in line with the merger of Shell marketing and producing units which formerly operated separately in the East and Midwest. Mr. Clough is a Harvard graduate and as a student of the Harvard Business School, held Gold championships in three Boston clubs. He still holds the course record of 67 at the Unicorn Country Club.

E. E. Connor, American Brakeblok representative in Minneapolis, has been appointed to the sales staff of the Kellogg Division, American Brake Shoe & Foundry Co. He is now performing special sales work in Chicago.

Sid G. Harris, whose former connections include Pines Winterfront, Macmillan Petroleum, and Continental Motors, is the newly appointed manager, Sales Engineering Dept., Fleet Industrial-Marine Division of Petroleum Solvents Corp., New York, makers of Siloo, Loosite, and other solvents.

George W. Curtis, new Milwaukee division manager, Timken Roller Bearing Co. Until his recent appointment he was district manager of Industrial Division

Gordon R. Walker is the new vice-president and general manager of Walker Mfg. Co., Racine, Wis., succeeding Malcolm McCormick, resigned.

George F. Cozzens has been named advertising manager of the Tire Division of the B. F. Goodrich Co. A native of Newport, R. I., he attended Harvard University, entered the advertising field with Ruthrauff & Ryan in 1927 and joined the Goodrich organization in 1934.

Gordon W. Mixon, now general sales manager, National Battery Co., St. Paul. He was former manager of Kansas City Division

John M. Teague, who for more than 20 years has been in the tire and brake business in Newark, N. J., has joined System Brake Service, Inc., of that city. He will be in charge of a new division for the reconditioning of exchanged shoes. The company distributes Westinghouse, B-K, Lockheed and Tru-stop brakes.

Herbert M. Wertz, for a number of years connected with the industrial division of the De Vilbiss Co., is now in charge of advertising for the Toledo Steel Products Co.

From the Finishes Division of E. I. du Pont de Nemours & Co. comes announcement of three new sales managers. They are: J. R. Masterson, regional manager at Dallas; H. R. Lounsbury, Western Refinish sales manager, Chicago, and G. F. Baldwin, manager, Refinish Sales in Eastern territory, Philadelphia.

Maintenance Man Available

A fleetman whose experience includes 13 years as superintendent of maintenance on trucks and buses and five years on passenger cars as well as two years of sales and service work on fleet accounts for a parts house, is now available. At present located in central New York State. For further details, address the Editor.

New Anti-Diversion Amendments

As a result of election-day polls, Nevada, Idaho and South Dakota have joined the ranks of states having anti-road-fund-diversion amendments in their constitutions. Others are California, Colorado, Kansas, Michigan, Minnesota, Missouri, New Hampshire and North Dakota.

More N. Y. City Roads to Aid Defense

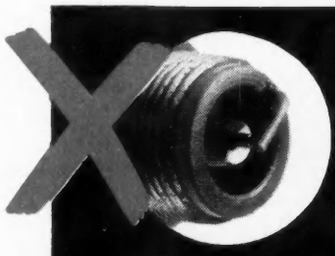
$65,000,000 worth of new strategic highways in the New York metropolitan area have been proposed for immediate construction by Robert Moses, Chairman of the Triboro Bridge Authority, on the grounds that they would fill vital gaps in the existing highway system. The proposal was submitted to Mayor LaGuardia with the suggestion that the entire cost be defrayed by the Federal Government out of National Defense appropriations.

The four proposed roads are a Pelham-Port Chester express highway, $16,300,000; a Brooklyn-Queens connecting highway, $12,100,000; an elevated highway across lower Manhattan, $19,100,000, and a Harlem River drive, $17,500,000.

New Truck Registrations by Makes by Months

	Auto-car	Brock-way	Chev-rolet	Diam-ond T	Dodge	Fed-eral	Ford	G.M.C.	Hud-son	Inter-nat'l	Mack	Ply-mouth	Reo	Ster-ling	Stude-baker	White	Willys	Misc.	Total
January 1940	143	117	15,997	536	4,345	153	13,282	3,142	56	5,538	572	718	11	22	85	434	173	326	45,650
January 1939	143	127	13,615	378	4,002	85	10,188	2,384	47	4,709	482	507	168	25	169	348	88	250	37,715
February 1940	94	92	14,145	425	4,341	113	12,092	2,724	60	5,009	425	767	4	31	101	380	182	351	41,336
February 1939	134	98	12,007	308	3,821	79	9,224	2,218	44	4,284	398	510	159	29	143	275	97	274	34,102
March 1940	137	123	18,398	573	5,356	161	14,993	3,457	76	6,943	534	949	6	24	154	660	233	316	53,093
March 1939	150	168	16,565	392	4,852	122	11,886	2,772	39	5,507	483	879	175	17	190	371	148	367	45,083
April 1940	156	102	19,429	563	5,654	152	15,444	4,071	92	7,049	656	1,070	7	35	133	840	222	307	58,982
April 1939	149	139	16,742	518	4,755	152	11,849	3,243	53	5,713	551	1,025	107	24	173	407	145	312	46,063
May 1940	158	143	[16,962	501	5,459	151	13,816	4,334	92	6,743	756	1,065	6	25	112	631	225	374	51,553
May 1939	184	177	[15,899	427	5,185	173	11,706	3,215	44	5,359	666	1,118	78	45	196	426	166	317	45,381
June 1940	127	121	14,246	533	4,412	116	11,647	3,357	67	6,291	561	902	20	30	103	574	188	209	43,504
June 1939	162	177	14,049	408	4,442	123	10,606	2,740	47	5,105	688	889	53	25	209	434	185	240	▼40,482
July 1940	160	153	16,384	642	4,731	121	14,447	4,252	64	7,104	718	999	78	28	77	476	248	231	50,913
July 1939	300	170	15,432	436	4,562	116	12,514	2,872	43	5,744	541	946	31	28	229	358	133	292	44,747
August 1940	112	137	17,053	587	4,724	121	12,380	3,900	34	7,397	661	685	93	30	92	470	214	290	48,980
August 1939	185	146	14,327	449	4,709	158	12,090	3,031	28	6,101	524	793	28	38	238	365	92	221	43,523
September 1940	134	131	11,394	530	3,488	134	10,804	3,204	34	7,081	639	434	99	22	74	551	208	265	39,224
September 1939	191	157	9,132	496	4,169	159	7,288	3,091	11	6,297	556	439	18	23	165	483	99	209	32,983
Nine Months 1940	1,221	1,119	144,008	4,890	42,510	1,222	118,905	32,441	575	59,155	5,522	7,589	324	247	931	5,016	1,891	2,689	430,235
Nine Months 1939	1,598	1,359	127,774	3,812	40,497	1,167	97,351	25,566	356	48,819	4,789	7,106	817	254	1,712	3,410	1,153	2,539	370,079
% Change Nine Mos.	−24	−17	+13	+28	+5	+5	+22	+27	+61	+21	+15	+7	−60	−3	−46	+47	+64	+5	+16

Corrected by AC



Skipping AND Breaking

WHAT HAPPENED—

(An Ohio grocer's experience.) In one group of vehicles, the plugs were skipping at low speeds. In another group, the plugs were suffering breakage of the lower insulators at low mileage. AC plugs one step "hotter" ended the skipping. AC plugs one step "cooler" cured the breaking. Backed by a schedule of regular cleaning and regapping, AC plugs have kept the vehicles on the job ever since.

WHY AC'S FIXED THE TROUBLE—

Skipping is a sure sign that the plugs are running too "cool" for the operating conditions of the engine. Lower insulator breaking is a sign that the plugs are running too "hot."

In every thread size, the AC Heat Range is so complete that there is an AC type which *exactly* fits *any* engine operating condition. This Ohio grocer's experience is only one of scores in which AC Spark Plugs have proved their ability to meet every need.

The *sure* way to complete plug satisfaction is the AC way,—

1 Standardize on the right *make* of plug
2 Select the correct *Heat Range*
3 Clean and regap all plugs every 3,000 to 4,000 miles

FOR BEST PERFORMANCE—USE AC

For More Than 31 Years

THE QUALITY SPARK PLUG

Chevrolet, Diamond T, Federal, GMC, International, and White Trucks; Buick, Cadillac, Chevrolet, La Salle, Nash, Oldsmobile, and Pontiac motor cars; Allis-Chalmers, J. I. Case, Cletrac, and International Harvester Tractors . . . these are some of the well-known trucks, cars, and tractors which use AC Quality Spark Plugs. Trust your spark plug requirements to the same brand of spark plugs which the leading, big-volume manufacturers select.

New, Improved

AC PLUG CLEANER

Cleans faster and better. Dual valve control cleans and dusts in one operation. Available with or without stand.

Ask Your AC Supplier

LOW IN PRICE

AC SPARK PLUG DIVISION • *General Motors Corporation* • FLINT, MICH.

When writing to advertisers please mention Commercial Car Journal

MEMO ON MANNERS

(CONTINUED FROM PAGE 21)

Know all the laws, follow rules etc., 8 per cent.

Willing to share road, 5 per cent.

Reliable and dependable, 4 per cent.

Generally more considerate, 9 per cent.

Considerate about dimming lights, 2 per cent.

Handle goods carefully, obtain business for town, willing to help one another in trouble, and cooperate on road surveys, 1 per cent or less.

About 10 per cent of those interviewed took no position because they had had no "experience" with truck drivers. Many specified more than one quality which they liked or disliked about drivers.

Now for dislikes:

Roadhogs, 15 per cent.

Discourtesy, 7 per cent.

Poor type personnel, 6 per cent.

Fast and reckless drivers, cause accidents, 5 per cent.

Jam up traffic, 3 per cent.

Refuse to move over when signalled, size of truck ("not their fault"), inconsiderate, do not know rules, poorly trained, keep to middle of road, slow up cars, handle goods roughly, take advantage of the size of their vehicles and park at sides of road, about 1 per cent.

In view of the fact that only a short time ago the term "truck driver" was used in everyday speech as a symbol of vulgarity and offensiveness, the number of friends truck drivers have was surprising to many operators.

"You act like a truck driver" was a derogatory expression used only a few years ago almost universally.

Truckmen should be pleased, too, to know that Secretary Ickes' blast at drivers — he told the AAA about a year ago that he has promised "to give myself the pleasure of driving down a truck-infested road in the biggest armored tank that I can find and bumping these pests from the road" —apparently made no dent in public consciousness. Ickes was tilting at windmills.

Operators should thank their own safety programs for the fact that 53 out of every 100 persons are staunch friends of the truck driver.

Many interesting observations on public reaction to truck drivers were contained in the reports of the trained field investigators who conducted the survey.

Comments by these investigators bore out the results of the survey. Twenty-seven out of 44 who made reports said public sentiment was on the truck drivers' side. Only three said public opinion in their communities definitely was antagonistic, while the friends and enemies were about equal in four other towns and cities.

The investigators did bring out two interesting points not disclosed by the survey:

1. In four of the larger cities people criticized city truck drivers, while a friendlier attitude toward over-the-road carriers was noted.

2. Persons in two towns pointed out that the drivers could not be critisized for what was the fault of the trucks they drove. They referred particularly to bigness.

In some of the larger cities—Boston, Cincinnati, and Salt Lake City—the investigators particularly noted criticism of city truck drivers. In New York this attitude definitely

(TURN TO NEXT PAGE, PLEASE)

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(CONTINUED FROM PAGE 66)
pulled public opinion generally over on the danger side.

"The general attitude toward trucking and truck drivers seems unfavorable," wrote the New York investigator. "This is true in spite of the fact that when asked what they disliked about truck drivers, few were able to give specific answers.

"One man made the observation that on the road the drivers for large trucking concerns were very courteous, but that the drivers for the independent or smaller concerns were not. He also pointed out that truck drivers on the road were different from truck drivers in the city. The latter were reckless drivers and uncivil. This last observation shows an attitude that is shared by a number of people spoken to."

The Cincinnati investigator said people looked on city truck drivers as having "no feeling for the other party—they will almost push you off the street." But truck drivers on the highways, he noted, are regarded as "always polite and courteous. They almost always stop if a car driver is in trouble," it was added. "They motion you on when you can't see by them."

Salt Lake City people complained of the discourtesy and "menace" of trucks operated by small independents. The interviewer in this city added:

"The public as a whole considers the driver of the large carrier trucks and interstate trucks as a good driver and exceptionally courteous.

"Truck drivers, in the past, were not held in very high esteem by the general public, but this has changed considerably in the last few years. The public is beginning to realize that the larger trucking companies are demanding that their drivers be of a higher type, intelligent, of good moral character, and physically able to do their job. They feel that trucking companies should demand the same high standards as railroads in the selection and training of their operators."

In Boston, drivers' "loudness and vulgarity were mentioned, and in a few cases they were contrasted with chauffeurs and bus drivers, with the latter emerging by far as the favorites."

Favorable comment far outweighed unfavorable, however, with many investigators reporting specific examples of motorists being helped on the highway by truck drivers.

"A common answer on the drivers," it was reported from Portsmouth, N. H., "is that they are helpful and excellent drivers."

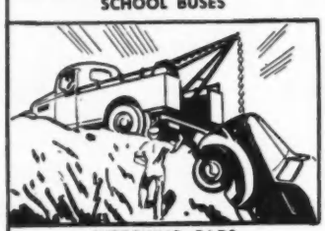
"One of the most universal comments on truck drivers was 'courtesy and willingness to help,'" wrote the investigator in White River Junction, Vt.

In Portland, Me., many people told the interviewer "of the aid and kindness extended to them by drivers, and of their (drivers') company on the road late at night. Very, very few people object to trucks or drivers, and those that do would object to anything just for the sake of objecting."

In North Towanda, N. Y., "the majority had nothing particularly they liked about truck drivers, but seemed to have difficulty figuring out something to dislike about them. Several had specific instances of kindness extended to them in difficulties by drivers."

(TURN TO PAGE 70, PLEASE)

SCHOOL BUSES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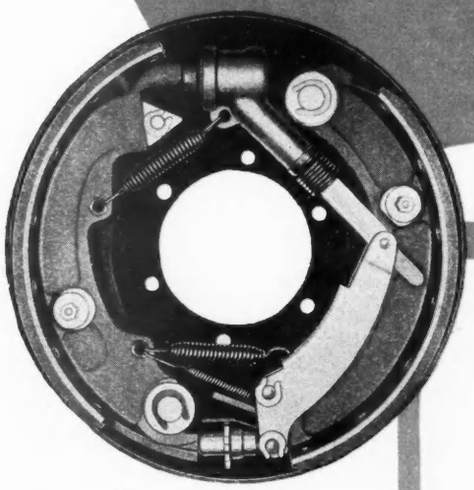

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✓ **EFFECTIVENESS**—Both brake shoes are equally effective in the forward stop. This greatly increases the effectiveness of the brake.

✓ **STABILITY of PERFORMANCE AND DESIGN**—*Fixed* anchor pins are employed permitting us to provide shoes of *known and fixed geometry* in the brake assembly. This geometry does not change from one brake application to another and remains *fixed* throughout the life of the brake lining, assuring stability of performance and uniform wear of lining on both shoes. The anchor pins are as short as possible, and the backing plate is brought close up to the center web of the shoe—thus minimum over-hang and maximum rigidity with minimum weight is provided, assuring additional stability and freedom from vibration and squeals. The shoes are held in a fixed position by fixed anchors and adequate retracting springs—and they cannot be jolted into contact with the drum even on rough roads, and will always return to their released position, thus eliminating drag.

✓ **SIMPLICITY**—Only one Hydraulic cylinder is used, the same as on conventional Lockheed two-shoe brakes. Consequently there are no more wheel cylinder pistons and cups and no more joints to seal against fluid leakage than on the conventional Wagner-Lockheed two-shoe brake which has been so universally successful. It is so designed that all air bubbles rise to the bleeder hole thereby retaining the same simplicity and ease of bleeding the system.

✓ **LONG LINING LIFE**—The braking effort is equally distributed between the two shoes, therefore the lining wear is also equally divided. This feature provides longer lining life.

✓ **LOWER TEMPERATURE**—Lower surface temperature of the lining is assured because the effort is equally distributed over *all* the lining on *both shoes.* Lower temperature assures less lining fade under severe braking.

✓ **QUIET OPERATION**—The pressure per square inch of lining is lower since both shoes are effective. This eliminates noise and squeals and lessens the tendency of brake drum scoring.

✓ **EASY SERVICING**—All parts are easily accessible. All brake shoes are preground to fixed dimensions and pivot about fixed anchor pins, thus giving uniform wear and clearances. Service shoes can be supplied with the original production lining which will be the same lining for both shoes. Worn out linings can be removed and replaced in the field, if desired. The HI-TORK brake does not require two different grades of lining in the same assembly to obtain good braking.

✓ **LOW COST**—Since there is nothing complicated about the Wagner HI-TORK Brake, all parts are economically manufactured on modern production machinery.

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(CONTINUED FROM PAGE 68)

Another point brought to this interviewer's attention was the fact that truck drivers often are blamed unfairly for accidents.

In Herkimer, N. Y., people feel that "the drivers are hard-working and courteous, as a rule."

In York, Pa., the investigator said: "Most people had to stop to think of criticisms of truck drivers, not being immediately conscious of any pet irks. To the contrary most criticisms were offered half-heartedly as if being only secondary considerations. The great majority, however, were conscious of the fact that truck drivers are very careful drivers and are courteous on the roads, that they know the traffic regulations, and they obey them implicitly."

Baltimore feels the truck driver is competent and courteous, and some people even say he is a "gentleman of the highway."

In Jacksonville, Fla., they feel toward the trucks only such feeling as is engendered by thoughtless drivers or careful drivers. In other words," said the investigator, "I think the conduct of the truck driver and his attitude toward the public has more influence on public opinion than any other one factor.

"The public's attitude toward truck drivers is on the whole friendly. They feel that they are good drivers and have been taught to exercise due care and that they are more courteous than the average passenger car driver."

In Orlando, Fla., one man told the interviewer how a truck driver rode five miles to "get something to bring the man in."

Some people in Atlanta, Ga., compared truck drivers unfavorably with train engineers, pointing out that drivers should be better trained.

"The drivers on the big transport trucks," the Atlanta investigator observed, "were in most cases considered to be as courteous and considerate as their big awkward trucks would let them be."

The Charlotte, N. C., interviewer mentioned that some people feel hours of truck drivers are too long.

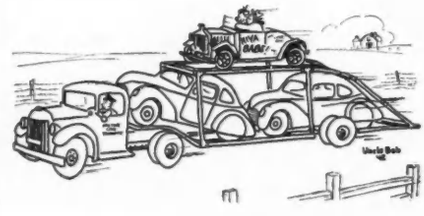
Detroit said the truck drivers' worst critics admit they are "far and away safer drivers than the general public. . . . For a truck not to take the outside edge (of the road) is almost unthinkable in this town."

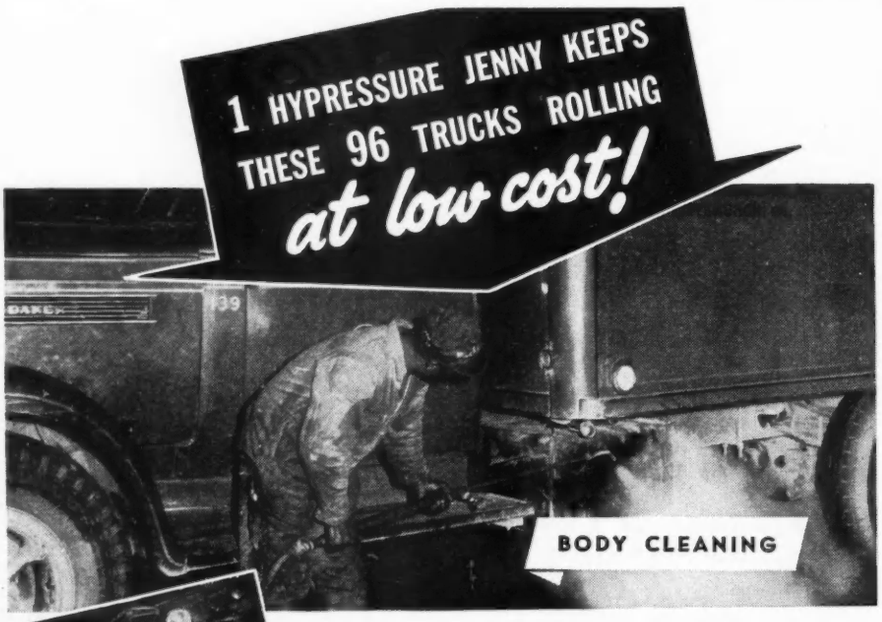
And so the interviewers' reports read. From Pontiac, Mich.; Muncie, Ind.; Stillwater, Okla.; Iowa City, Iowa; Oxford, Kan.; Portland, Ore.; Los Angeles and other cities the investigators used the same words over and over again—courteous, competent, helpful, friendly.

From Snyder, Tex., however, comes the millenium. In that town, wrote the investigator, the truck driver has ceased to be a roughneck and has become "a fine, upright citizen, a person whose wide knowledge of this part of the state qualifies him for other professions when he ceases to be a truck driver."

When a truck driver has any trouble in the Snyder area, passenger cars actually stop to offer assistance!

Secretary Ickes, how about a little trip to Snyder?





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INTERNATIONAL FOR '41

(CONTINUED FROM PAGE 33)

Such time-proved features as full-pressure lubrication to main, connecting-rod and camshaft bearings, piston pins and timing chain; replaceable shell, precision-type main and connecting-rod bearings; counterbalanced crankshaft; hardened exhaust valve seat inserts; balanced down-draft carburetion; oil-bath type air cleaner; wire-wool air filters in crankcase ventilator intakes; and floating-type oil intake have been retained. In addition, there are several new features which contribute to dependable starting, long life and improved performance.

A spring-loaded choke valve, mechanical shift starter, and larger-size flywheel ring gear are three new features which contribute to easy starting. The new choke valve takes the human element out of choke control, preventing engine flooding.

The new mechanical-shift starting-motor pinion remains engaged with the flywheel ring gear as long as the driver keeps his foot on the pedal. An overrunning clutch in the starter prevents the starting motor armature from being driven at excessive speed.

Because of the new large-size flywheel ring gear more torque is available for starting the engine. The large-diameter flywheel also increases the smoothness of operation of the engine, especially at low speeds, and makes possible a lower idling speed.

The fuel tank is located low in the frame and the fuel line is outside the truck frame. The fuel pump is of the inverted type. The fuel tank, fuel line and fuel pump are all exposed to air circulation. This provides a safeguard against vapor lock.

A fine-edge type fuel filter assures a clean supply of fuel to the carburetor. It is located in the carburetor.

An oil-bath air cleaner has for years been regular equipment on all truck engines. The connection between the air cleaner and carburetor on the new engines is protected by a new V-type seal with rubber gasket which prevents dirt or dust from entering the connection.

Other new features which contribute to long engine life include improved, non-clogging pressure lubrication to the timing chain; a ball-bearing mounted water pump shaft; rubber-mounted radiator; and three-point rubber mounting for the engine. The spark plugs are of a new, longer-life type. They have a larger center electrode and a larger ground wire which is flat, thereby maintaining the proper spark gap clearance over a longer length of time.

New highly efficient hydraulic brakes are standard on all models. These two-shoe, double-anchor-type brakes provide greatly improved braking ability for truck models of the various sizes. On the larger capacity models K-4 and K-5, an entirely new, but fully proved, type of rear wheel brake is employed. On the rear wheels of these models are the new "Hi-Tork" brakes which have many outstanding advantages including (1) longer lining and drum life because pressures are more nearly equalized on both brake shoes; (2) basic hydraulic brake principles have been retained and improved; (3) in-

(TURN TO PAGE 76, PLEASE)

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In the big truck fleets, where long-term maintenance is always recognized as a vital cost of operation, you will find widespread reliance on Eberhard design and construction.
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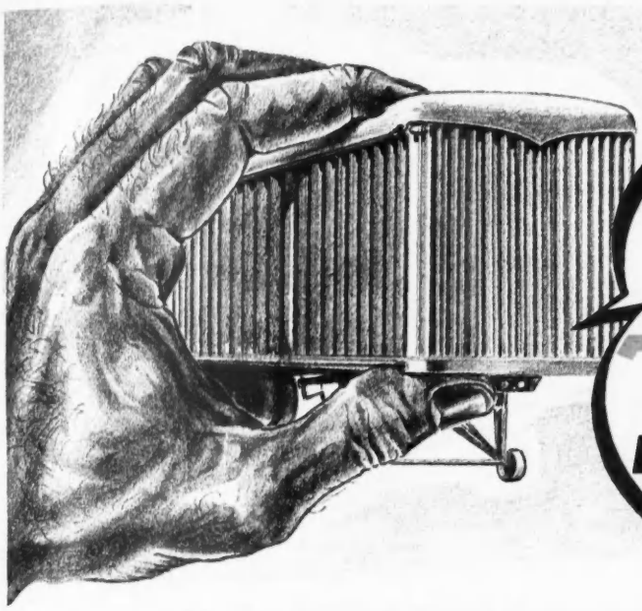

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The same weight of material — or even lighter — but infinitely stronger and harder to bend because of the columnar shape.

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MORE STRENGTH

Each part of the Outside Frame trailer is built to carry its share of the load. Deeper cargo carrying beams, the foundation designed to transfer loads, roof built to absorb stresses, the box-like rear and front framed for strength — all are welded into a rigid assembly that cannot weave or warp out of shape. It's stronger because each part improves the strength of the entire structure.

LESS WEIGHT

Through the correct design, all excess material and weight has been omitted. There's no lazy material to increase thickness and add dead weight. Hundreds of pounds have been cut out to make this sturdy trailer the lightest possible weight consistent with safety — all this without the use of expensive alloy metals.

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The steel used in the Outside Frame Trailmobile is high tensile, copper bearing steel — far more rust resisting than ordinary steel. It does not require expensive processes and equipment or special training to service it.

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(CONTINUED FROM PAGE 74)
creased brake efficiency eliminates need for especially large brakes; (4) longer drum life due to new drum design; (5) simplicity of design and a minimum number of parts; and (6) easy adjustment features, although adjustment is less frequently required. (A complete description of the new brake appears elsewhere in this issue.)

Other important new mechanical features in the new models are the exceptionally easy-riding qualities, made possible by longer front springs; a newly designed, all-steel "comfort" cab with quickly adjustable seat and back cushions; improved steering; wider frames and treads which contribute to stability and provide for mounting of standard bodies of all types; standardized cab-to-rear-axle dimensions so vitally necessary to body interchangeability; improved load distribution, which assures longer truck life and more uniform tire wear due to better distribution of load between axles.

In these new Internationals are other quality features of design such as full floating rear axles (except in the ½-ton and ¾-ton models); roller bearing anti-friction universal joints; improved-type self-aligning propeller shaft center bearings in the long-wheelbase chassis; rubber-cushioned three-point engine mounting; rubber-mounted radiator; sealed beam headlights; mechanical shift starter; sturdy truck-type clutches and transmissions; two-speed rear axles in 1¼ and 1½-ton models; and many others.

Elements of the new and distinctive styling include long, sweeping lines of hood, grille and fenders; conservative use of chromium trim; headlights mounted in fenders; newly designed hood-side name plate and distinctive triple-diamond emblem; gracefully curving skirted fenders, which, with the grille, form an easily removed one-piece unit providing maximum accessibility for the engine; one-piece hood raising from the front; and sloping V-type one-piece windshield which gives excellent visibility. The curvature of the cab and panel body windows and window wells is in strict keeping with the style motif. Hardware inside and out and a well-designed instrument panel are pleasing to the eye.

Standard panel, pickup, canopy-top and station wagon bodies have been designed to harmonize with the lines of the hood, fenders and grille. These are available in several sizes for each of the three lighter models. Standard stake, dump, and other body types are available for the larger units.

Interiors of the all-steel cabs and panel bodies, as well as the exteriors, have been designed for appearance in addition to comfort and utility. In each of the new models International's engineers have succeeded in their efforts to integrate distinctive appearance with advanced performance and economy features.

"I can understand why you picked an International truck!"

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There are many reasons why GATKE *CUSTOM-BILT* Brake Blocks give SAFER, more dependable brakes and reduce maintenance expense.

GATKE experience acquired in 26 years of solving tough brake problems goes into the making. Assures the last word in SAFE, dependable operation. Smooth, quiet stopping without grabs or squeaks. Uniform holding power at all service temperatures. Easy on drums. Long service with few adjustments.

MAKE THIS TEST. Use GATKE Brake Blocks for your next five relines. Compare results with the best performance you have ever had.

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Dissipates heat faster than the ordinary spark plug. Eliminates "ping" due to over-heating. Has longer life. Delivers a hotter spark at highest speeds, burning the gasoline more completely. Releases *all* the flashing power built into today's trucks and cars—all because it is the *one* spark plug specially engineered for the higher temperatures, higher compression, higher speed of modern engines.

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TRUXMORE 3RD AXLES OFFERED IN 11 SIZES

TRUCK EQUIPMENT CO., INC., of Buffalo, N. Y., has expanded its line of Truxmore 3rd Axles to 11 models, making it possible to apply the correct size and model to any make and size of motor truck.

The recommended Truxmore gross vehicle weights coincide very closely with those of the truck manufacturers' tractor ratings, permitting a harmony and balance not possible heretofore. The increasing consumer demand and acceptance for Truxmores has warranted this expanded program. Although basically the same design as previous models, many mechanical improvements have been incorporated in the new models.

Gravity Spring Suspension, an integral and exclusive Truxmore 3rd Axle feature, has been increased in strength, and the increased-in-size, heat-treated crankshafts now ride in unusually large bronze bushings in all models. Large automatic oil reservoirs supply ample lubrication with minimum of refill attention. These reservoirs are easily filled from outside the frame.

The Load Shifter is retained as standard equipment on all models, and is claimed to be the only device that permits shifting more weight to the drive axle when additional traction is required when snow, ice, sleet, or tough going is encountered. This is done in a few minutes, with an ordinary wrench, without removing any parts, and with the vehicle light or laden.

The sliding ball action on the exle and in the walking beams has been improved with coil springs inside the balls, keeping them snugly fit to the axle. Spring leaf cross member and spring leaf brake torques provide trouble-free torque and twist absorbers, with no moving parts. Timken Roller Bearings support the crankshafts in the walking beams.

Hydraulic and mechanical brakes, either vacuum or air operated, are available.

Enveloping type frames are used for reinforcing truck frames to supply length and strength necessary to support doubled payloads.

Heavy-duty radius rods are provided to insure proper alignment of drive axle and permit drive axle springs, merely to support the load carried on the drive axle tires, while the Gravity Spring Suspension in the Truxmore cushions and supports 70 to 75 per cent of the body and payload weight carried on both rear axles.

Major specifications of the new models follow:

Model	Max. G.V.W.	Max. Tire Size	Max. Brake Size (In.)	Ave. Wgt. (Lb.)
22	22000	7.50-20 32x6-10 ply	16 x 2½	2250
*26X	26000	8.25-20 34 x 7	16 x 2½	2500
26	26000	32x7-10 ply	15 x 3½	2250
27	27000	8.25-20	16 x 3½	2450
28	28000	34 x 7	16 x 3½	2550
33	33000	9.00-20	17¼ x 4† 17¼ x 3‡	2950
35	35000	9.00-22	17¼ x 4	3100
39	39000	9.75-20	17¼ x 4	3400
42	42000	9.75-22	17¼ x 4	3500
47	47000	10.50-20	17¼ x 5† 17¼ x 4‡	3700
50	50000	10.50-22	17¼ x 5† 17¼ x 4‡	3800

* For Trucks having engines not larger than 271 cu. in.

† Hydraulic. ‡ Mechanical.

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Standard Bending Test on Kem Transport Enamel Panel.
...to give your trucks a more flexible finish
"That's me, bending double over a quarter-inch rod—a standard test for flexibility, adhesion and film strength of Kem Transport Enamels. But that's not all! I spend weeks under 95% humidity, have a bout with the bump machine, sit for days in the weatherometer, and have a session with an angry grinding wheel. That's why I live so long on your trucks!"
• • •
Actually, Kem Transport Enamels take a far worse beating in our laboratories than they ever get in service on your fleet. But having passed these gruelling tests, we know they'll last much longer, look smarter, and stand abuse better.
For example, the terrific twists of rough track crossings are mild to a finish that passes that bending test. The shock and vibration of cobblestone streets are nothing after our bump machine test. Tropic humidity, gritty cleaning materials and flying gravel — these hazards are far exceeded right in our own laboratory.
That's why you can be sure that Kem Transport Enamels will stand up on your fleet. Try this super-tough enamel on your next paint job. Write today for full data. The Sherwin-Williams Company, Cleveland, Ohio, and all principal cities.
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Sets a New Standard for MILEAGE

The exclusive new Kraft System now allows you to have your truck tires renewed locally by the same uniform, scientific methods used by *tire factories* . . . under these rigid factory-*controls:* Factory-approved equipment; factory specified methods; factory-trained men; factory-laboratory control.

NO ORDINARY *"RETREAD"* OR *"RECAP"*—For the first time, The Kraft System has made possible an engineering guide which guarantees that locally renewed tires are brought up to the *original factory standard* of tread thickness, toughness and correct balance of tread and body.

BALANCED LIKE A NEW TIRE—The new, specially designed *Kraft Tire Balancer* now gives you the first guarantee that your renewed tires are balanced perfectly . . . *exactly like new tires.*

A NEW STANDARD OF QUALITY—No matter what make of tires you use, the Kraft System offers you a *proved quality* that gives you the first *positive* assurance of *dependable* extra mileage.

MEET YOUR *"MASTER KRAFTSMAN"*—Get the facts on the Kraft System from your local Distributor for the General Tire. He *alone* in your area is authorized to renew tire mileage by this revolutionary new method that is reducing tire costs for thousands of operators.

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TREAD TOO THIN
Will wear out too soon. Poor puncture protection.
TREAD TOO NARROW
Will cause excessive body flexing . . risk of blowouts.
TREAD TOO THICK
Will cause overheating . . . Likely to peel off.
TIRE UNBALANCED
Unbalanced tires wear 15% to 20% faster, cause shimmy.

When you have your tires renewed by The Kraft System you are buying Performance instead of adjustments.

THE KRAFT SYSTEM IS AVAILABLE ONLY AT DISTRIBUTORS FOR

The GENERAL TIRE

—goes a long way to make friends

(SAFETY) INFORMATION PLEASE!

(CONTINUED FROM PAGE 24)

spectors out about 25 miles on a Federal highway.

The national emergency conditions as related to motor vehicles were reviewed by H. H. Kelly, chief of Section of Safety, I.C.C. Bureau of Motor Carriers, and also vice-chairman of the Commercial Vehicle Section.

"If war should come to us," said he during a featured talk on "Federal Safety Regulations," at a luncheon session, "there would be immediate national pressure for greater efficiency and safety in the operation of all motor vehicles."

He mentioned the safety activities of the Bureau of Public Roads since 1919 and its program of reducing Federal highway grades to a 6 per cent maximum and curves to a maximum radius of 1000 ft., and the placing of standardized signs and markers. An additional need is widened road shoulders at spaced intervals to afford improved by-passing facilities for military traffic, and the widening and strengthening of many bridges. Also the safety and efficiency training of many new Army transport drivers which, he believed, would help to raise the standards of all highway driving.

There was also need, he said, to develop and apply through the I.C.C. more definite standards to the motor truck industry in the safe packaging and handling of war materials, including explosives and other dangerous articles. He mentioned the work of a new Federal Inter-departmental Automotive Committee, to coordinate the safety standards and activities of 88 different Federal fleets totaling about 200,000 vehicles—and previously only 6 of these fleets had even been keeping accident records. He reported a recent demand for many thousands of copies, including reprints by other organizations, of the new I.C.C. motor vehicle safety regulations, now also applicable (since October 15) to all private carriers in interstate motor freight operations.

"Fleet Safety" was the general subject for the first day's sessions. T. L. Preble, supervisor of automotive transportation, Tide Water Associated Oil Co., New York City, talked on "The Commercial Driver's Opportunity to Prevent Accidents." In his opinion, the "safety opportunity" of the driver depends largely on his safety training by supervisors. The supervisor first should do some research work — school himself thoroughly in the facts about his own fleet accidents. Then frankly discuss the total costs of accidents with his drivers; and also such topics as cause and control of skidding, best methods in signalling, hazards of inattention, effect of truck accidents on company goodwill and adverse trucking legislation. The driver training should include the enforcement of fair rules, recording accident-scene facts, accident clinics that will deeply impress drivers, and written quizzes they will remember.

R. C. Haven, safety engineer of Continental Baking Co., New York City, discussed methods used by his company in "Getting Safety Across to the Driver-Salesman." Such drivers, he emphasized, have personal

(TURN TO PAGE 82, PLEASE)

More Shop Work in Less Time

..with this handy Kellogg Portable One-End Lift

Do you want to reduce the hours of time and needless dollars spent in washing and servicing your fleet units? You can get those jobs done quicker, easier, with a Kellogg Portable Lift.

No installation — workman simply rolls the Kellogg Portable Lift under the axle and turns on the air. Up goes end of car (front or rear) to desired height, as much as 56". Just that simple. No need to move cars. Naturally, lubrication jobs, brake service, washing, inspection all take less time—release your units quickly for more work. Kellogg Portable Lifts are not expensive — but they're time and money savers.

FASTER WASHING WITH THE HARDIE-KELLOGG CAR WASHER— Less time, yes — and less labor, less materials needed to keep your units clean. Hot water or solutions at high pressure clean worst grease or mud accumulation in a jiffy. Hardie-Kellogg Car Washers available in a size to meet your needs.

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Judged the safest inter-city fleet of 51 or more buses operating east of the Mississippi, New England Transportation Company specifies Willard Bus and Truck Batteries.

For complete transportation service, New England also operates a large fleet of trucks that are Willard equipped.

SAFETY AWARD WINNER Selects Willards

New England Transportation Company, Longtime User of Willard Batteries, Wins National Safety Contest Award

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With over 163,000,000 miles of experience, the New England Transportation Company knows that you can always depend on a Willard . . . for greater safety . . . for longer life . . . for lower operating costs. Like so many other modern, efficient bus operators, this company demands the *best* in batteries—Willards—because *they cost less to own!*

If you want to cut *your* operating expenses, let us send you full information about the new, improved Willard Bus and Truck Batteries. They give you four extra advantages . . . at NO extra cost. They assure you More Battery for Your Money!

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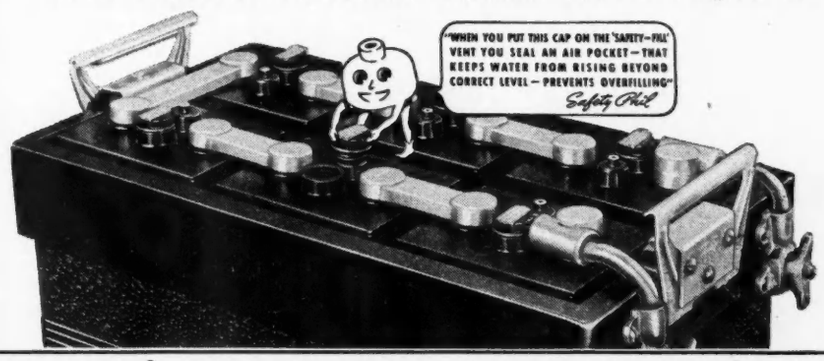
4 Extra Advantages at NO EXTRA COST in the new, improved WILLARDS

1. LONGER LIFE—10 to 15% more miles and months of service . . . even more than in former Willards.

2. MORE RESERVE POWER because these new Willard Bus and Truck batteries contain 7 to 9% more plate materials in each cell.

3. GUARANTEED CAPACITIES molded right on the case. You can see you're getting *full* measure.

4. NEW "SAFETY-FILL" CONSTRUCTION prevents overfilling—guards against the danger of corroded cables and terminals.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(CONTINUED FROM PAGE 80)
characteristics and duties quite different from the ordinary truck driver. They must be always neat in appearance, capable of meeting customers and selling, able to handle sales and collection problems, adaptable to many hurried stops, and in general their actual driving is incidental. Such drivers react more favorably if instructed in safety by their immediate supervisor, versus mass instruction methods. Their supervisor thus must be competent to give personalized instruction; and supervisor training is the most important company safety problem.

Their driver-salesmen are especially schooled to understand the cost of an accident, measured in terms of how many extra thousand loaves of bread must be sold (at an average profit of one-eighth of a cent) to pay for it. The men are given one, two, and four-year safety medals, and for the tenth no-accident year a prize Hamilton watch. The recent average cost of the company accidents, under their self-insurance plan, has been $43 per accident; as compared with former per-accident costs of $85 and $66. Their records show a positive return of 400 per cent on every dollar spent in accident prevention. They stress the following four simple rules of "defensive driving":

1. Always maintain an *area of safety*—in front, behind, and on both sides.

2. Always drive at a *safe speed*—consistent with road surface, visibility ahead, traffic conditions.

3. Never insist on having the *right-of-way*.

4. Always drive on the theory that *all other drivers are deaf, dumb and blind*.

R. H. Clark, general superintendent of transportation, Consolidated Edison Co. of New York, Inc., New York City, described a "Practical Maintenance Program" which has enabled his company to reduce the space needs for their central maintenance shop from 75,000 to only 5000 sq. ft.; and also to make large labor savings since the adoption of the plan 3½ years ago.

"Too many crackpot ideas and theories have been foisted upon transportation executives," said he, "with the view to eliminating 25 per cent of the oil bill, cutting gas consumption in half, or eliminating carbon by means of a prayer and a turkish bath."

One danger for the fleet operator to guard against, is excessive pride in a shop well equipped with equipment seldom used. He also fears that "Uncle Sam" one day may wake up, as the result of the present huge automobile purchasing program, to find the need of so many additional trained technicians to catch up with neglected maintenance work, that "private industry will find it difficult to secure trained automobile mechanics."

"The economical and safe operation of any fleet of trucks," he continued, "is dependent upon the mechanical maintenance program. Systematic preventive maintenance avoids premature depreciation and insures a longer mechanical life."

However, he is quite unorthodox in some of his "P.M.S." ideas. He does not require his trained mechanics to use any "elaborate printed forms." Each car is "P.M.S.'ed" every 10 weeks by a mechanic and

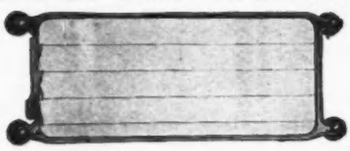
SAFETY EQUIPMENT

Specified by the ICC

"3.342 Defrosting Device
Every motor vehicle which is equipped with a windshield, when operating under conditions such that ice or frost would be likely to collect on windshield, shall be equipped with a device or other means for preventing or removing such ice or frost."
See page 47, ICC Motor Carriers' Safety Regulations, Revised.

and here are the Right Answers:

FULTON Electric Sleet-Frost Shield



Rubber-sealed air space prevents frost or steam from forming on *inside* of windshield, without use of electric current, which is turned on only as needed, for removing sleet or snow from *outside* of windshield. Keeps its space on windshield clear, both inside and outside, in ALL weather. Highest quality construction. Various types and sizes at new low prices. No. 1-F3, illustrated, with 4 heating wires, complete with cord.
List Prices: 6-volt, $2.75; 12-volt $3.00.

No. 496 Defrosting Fan

Unexcelled for keeping windshield and cab windows free of both frost and steam. Improves efficiency of built-in defrosters by distributing heated air over glass area. Valuable for cooling and ventilating in hot weather.

New, universal type curved bracket permits mounting in choice of four directions at any point where attached . . . on steering post, instrument cowl, headerboard, WINDSHIELD CENTER POST or WINDSHIELD FRAME. Two-blade 6" fan (non-overlapping soft rubber blades) moves large air volume and permits greatest visibility of road and instrument panel. Streamlined, two-tone "Tiffany" finish motor case with fittings to match. Specially wound 2-speed motor.
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Steering post installation

Attached to windshield

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helper who make all necessary repairs or adjustments immediately. A different group of mechanics follow up on the daily chauffeur complains and running repairs. "In this way," he explained, "a mechanic doing an inspection one night is not encouraged to look for the opportunity to sneak back and correct a mistake the following night."

Each mechanic assumes individual responsibility for his work, resulting in more self-pride and confidence. A mechanic is not pinned down to a definite routine of work or time. In general there is one mechanic or helper for each nine vehicles. Assuming an arbitrary fleet of 200 vehicles, that would mean a total of 22 mechanics. On the basis of an inspection every 10 weeks (approximately 50 working days) it would be necessary to schedule the work at the rate of four cars per day. With two men assigned to each vehicle that would require a crew of eight working full time. The other 14 mechanics would be available to handle daily chauffeur or "book" complaints.

A mechanic's work is not regularly inspected by anybody else, and if there are any bad results he "explains" the next night to his foreman. Thus, one group of the mechanics is a check on the other group. The company formerly was using 75,000 sq. ft. of space and employing 175 men, in an elaborate Reconditioning Station for the complete maintenance of their equipment. It included the building of commercial bodies, a paint shop, a blacksmith and woodworking shop, a machine shop and an elaborate storeroom. Today they need only 5000 sq. ft. for their more elaborate general repairs; and all other repairs are made at night in their 18 system garages.

During on Open Forum period, James G. Hayden, fleet engineer of the National Safety Council, refereed a lively discussion on the Council rule that no driver who has had an accident to his vehicle shall receive a Safe Driver Award, even though the accident has been adjudged not his fault. There was considerable opposition to the rule. In contrast, it was brought out that such medals usually are "not worth a tinker's darn" unless the company maintains a high opinion of their worth and "makes a real fuss over their presentation." For instance, one company was mentioned which let their safety program slacken to mere formal handing out of safety medals; and within 6 months their accidents had doubled and it required two years of hard work to bring back "the old safety atmosphere." It was suggested, in favor of the not-at-fault driver, that there be established a definite national code on "how to judge driver responsibility for an accident"; a change in the definition of "what is a properly parked car"; and standards "to check responsibility for rear-end accidents."

Rules for Safety Engineers

An entire day was given to "Rules and Tools of the Fleet Safety Engineer," a series of talks by a "panel of experts." Don M. Goodwillie, safety engineer of The Willett Co., Chicago, spoke on "Management's Interest and Responsibility." He advised that any company, to do a good safety job, "must actually *want*

(Turn to Next Page, Please)

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All-Wheel-Drive

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When you start somewhere with a Marmon-Herrington *All-Wheel-Drive* Truck, *you get there!* When you get into a particularly bad piece of going, *it gets you out.* Traction obtained through all the wheels, and big pneumatic tires, accomplishes feats of transportation you would never consider possible. Hub deep mud or sand or extra steep grades are its "meat." And when it comes to pushing snow plows through heavy drifts, or when road graders must dig deep, it does the job, easier and faster than anything on wheels. For all sorts of work, on the highway and off, in road building and maintenance, in the oil fields, in logging and utility services, etc., these vehicles are supreme. We convert all standard Fords to *All-Wheel-Drive*, and build a complete line of heavy duty *All-Wheel-Drive* trucks with capacities up to 35 tons. Write for new, illustrated literature just off the press. Cable address Marton.

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INDIANAPOLIS, INDIANA, U.S.A.

(CONTINUED FROM PAGE 83)
improved accident experience in the same way that they want improved company sales." They must select a competent safety man—maybe trained outside their own company—give him real authority, and assign him a working appropriation and tools comparable to the equipment of their other engineering departments. It usually will require two years to get results. In his opinion, a self-insurance program causes the average company to take much greater interest. Instead of saying— "Oh, hell, the insurance company will pay for this accident," they will say—"This accident cost us $400, and we can't afford to let it happen again." Many fleet safety engineers, he thinks, "do not stick their chins out enough to let management know what equipment they need."

E. S. Lusk, director of safety & personnel, Peter Eckrich & Sons, Inc., Kalamazoo, Mich., told about results achieved by his company in their program to impress on each worker his "individual responsibility for safety." It begins before the worker is hired, and he is made continuously to feel that it is an important factor in his work, happiness and future promotion. The theory first prompted them, about two years ago, "to go self-insured" on their factory Workmen's Compensation Insurance. "Our net savings the first year," said Mr. Lusk, "was 56 per cent of the insurance paid during the previous year. This current year to the end of August, our loss experience is 12.6 per cent in actual to expected." In their fleet safety program, their accident rate in over 2,225,000 miles for the year ending June, 1940, was 1.43 as compared with 2.54 for the previous year, a reduction of nearly 50 per cent. But for their fleet they have never considered self-insurance. "This is because we have no control over other drivers than our own; so we are cooperating with our insurance company to help get all fleets to operate more safely."

H. D. Scheffer, safety director, Auto-Owners Insurance Co., talked on "Accident Reporting and Analysis." He emphasized that there should be accurate records even of the most trivial accidents; since an accident thought to be minor might develop into a serious one, "especially if an ambulance lawyer should get hold of it." Also, an accident to a minor years later might pop up. It is most important to train drivers thoroughly in accident reporting; and to keep a complete fleet accident file.

H. J. Jones, director of safety and personnel, Automobile Shippers, Inc., Detroit, told of his experiences in "Selection of Personnel." He places first "good character," and second "competency." To get the first he carefully follows upon references, especially those pertaining to applicant's community credit rating and home-life habits. "Give me a man with high character," said he, "and I can train him to be a good driver. It is the safety director's job to teach others in his company how properly to select the right men—and we always aim a little higher than ordinary driver qualifications." They require considerable highway driving experience, but no special mechanical knowledge, since they trade in their light trucks after 75,000 to 80,000 miles and have few road failures.

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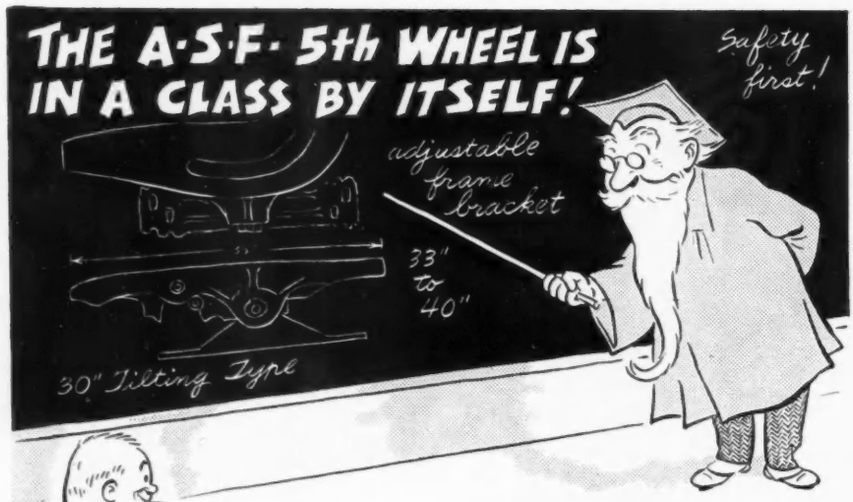

Q. ..... Why is the *A.S.F. Fifth Wheel* the SAFEST?

A. (Truck Driver). "Because it is positive locking, anti-creep and anti-jump features prevent accidental uncoupling, and I drive thousands of miles without danger of losing a payload."

Q. ..... What are the principal "Features of Design" in the *A.S.F. Fifth Wheel?*

A. (Maintenance Engineer)..... "The locking mechanism is tumbler type. There are *No* springs to lose tension. The whole lock assembly is protected by rubber cushion against both draft and buffing shocks. The lock engages the king pin at the plate (the heaviest part to the king pin) prevents galling of the king pin, and reduces maintenance to a minimum."

Q. ..... Why is the *A.S.F. Fifth Wheel* the most Economical?

A. (Manager) .... "The A.S.F. Fifth Wheel, due to modern engineering and design, have made it possible to operate tractors as much as 500,000 miles without replacement. Comparison with other couplers shows conclusively that cost of repairs have been materially reduced through the use of this wheel resulting in economy."

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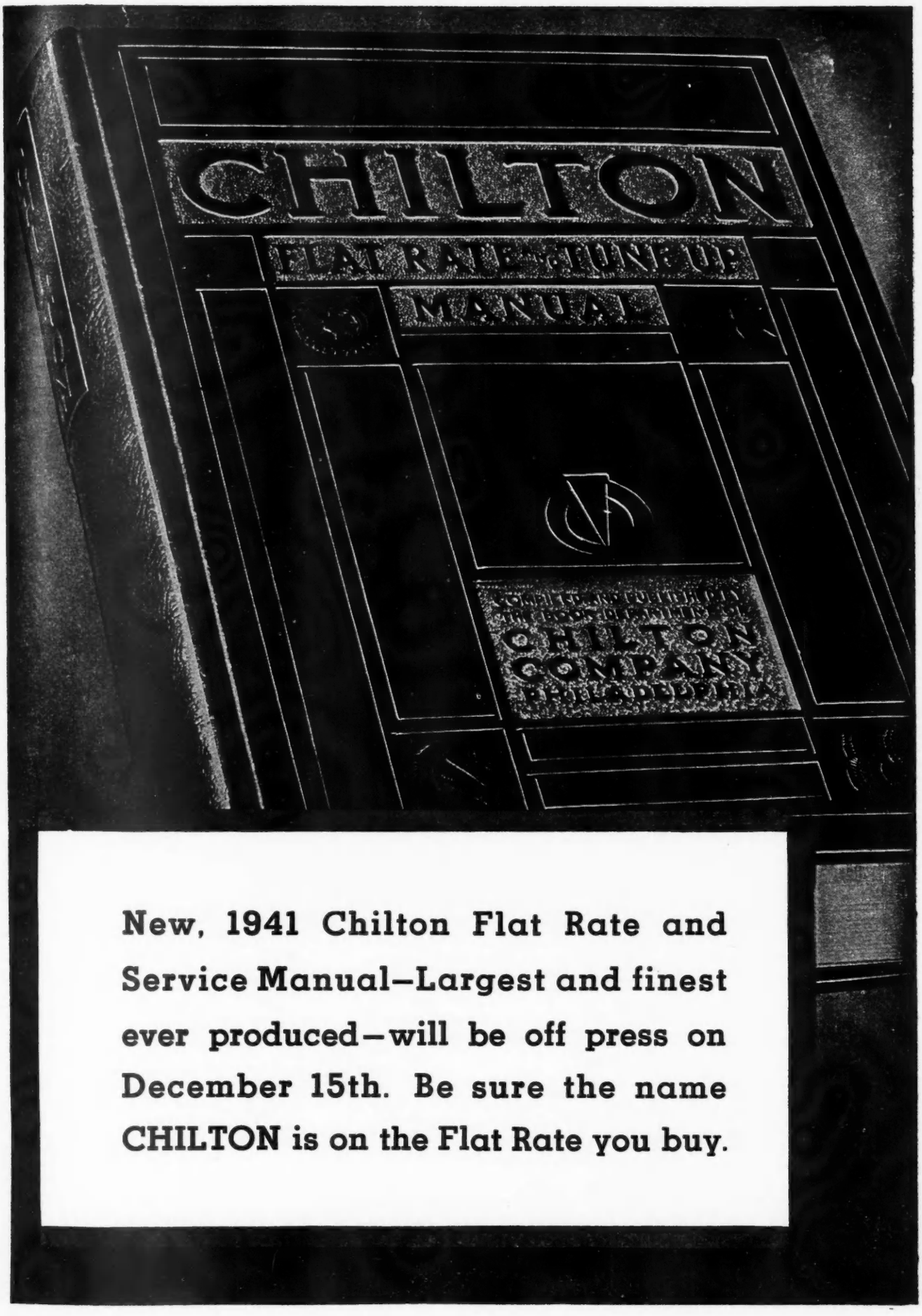
A-S-F- FIFTH WHEEL



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F. L. Struggles, assistant manager, Dept. of Safety & Personnel, Greyhound Management Co., Cleveland, summarized his company methods in "Training of Personnel." It is comparatively easy, said he, to find out an applicant's driving ability by checking his references and driving tests. "But," he added, "we must actually sell to a driver the fact that safety pays. Safety is a selling job, and requires an impressive training program to keep the driver always interested." The best method, he thinks, is to require when possible some training sacrifices by the driver before he is hired. A training school is best. Instructors must be carefully selected. Actual highway stopping tests are important; and training in defensive driving methods—keeping the vehicle always under control. Also some mechanical instruction, to handle minor road failures. Short written examinations and personal quizzes are good, and maybe small cash awards for good grades. Then watch performance records, and help the drivers who may be slipping.

C. G. Bender, safety director, The Kellogg Co., Battle Creek, Mich., stirred much interest by his opinions on "Bonuses, Awards and Penalties." The goal of a safety program, said he, is to *create the desire to work and drive safely*. This must be achieved through the development of a co-operative spirit of goodwill. Safety awards definitely can help to get this spirit. These awards need not have great monetary value. They may include commendatory letters over an executive's signature, group pictures, smokers and dinners to group winners, laudatory publicity. But *penalties*, he believes have no place in a safety program. They are comparable to fines. They are dynamite, destroy morale, create illwill. However, he grants that *discipline*—such as a layoff after a number of accidents—might fit into a constructive picture, provided it is a part of a general company program much broader than safety. Also, he doesn't believe much in cash *bonuses*. Why pay a man to drive safely, when that was what he was hired to do? At least, a cash bonus plan must be carefully considered before started, since to drop it may be more dynamite. Another delegate argued that if a company can afford to pay a substantial cash bonus, then why not add it immediately to everybody's wages, to create general goodwill? Thus make safety justify itself, stand on its own feet.

John Holtkemp, fleet engineer, Fidelty & Casualty Co. of N. Y., upheld the value of "Committees to Make Inspections and Determine Accident Responsibility." Such a committee should be a general one, representing management and to include several drivers rotated to spread the experience. If a safety or kangaroo court, it should be seriously and fairly conducted, should make definite at-fault or not-at-fault decisions based on established fleet rules, and commend a driver exonerated. Examples were mentioned where such methods had lessened "union troubles" and greatly improved no-accident records.

Mark Ferrari, supervising fleet engineer, Continental Casualty Co., defended "Contests" as a worthy safety tool. He listed five cardinal principles to make a successful contest

Whether they're coming round the mountain on snowy, slippery roads, stepping along on the level, or putting on the brakes to stop for the light at an icy intersection, Trucktored Six-Wheelers are far safer than multi-unit trucks. Single unit construction makes six-wheelers easier to handle, exceptional traction and low center of gravity make them less likely to skid, there is no possibility of jack-knifing, and response to braking action is fast and positive. And if you discount these claims as coming from an interested source, we refer you to the entirely disinterested testimonial provided by insurance companies in allowing from twenty to fifty per cent lower rates to six-wheelers on liability and property damage policies.

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between balanced company teams. Management and supervision must prove a continuously serious interest. Arouse drivers' interest by letting them elect their own captains for teams of five to 25 members, for contests preferably to be concluded in three to six months. The committee to decide on chargeable accidents must be active and absolutely fair. Announce suitable awards or trophies that the drivers are interested in—find out what they want. The conclusion must bring improved safety results and the management must recognize them—perhaps with a general dinner for both the winning and losing teams.

Sgt. C. H. Buss, safety engineer, Brady Transfer & Storage Co., Fort Dodge, Iowa, talked on "First Aid, Road Trailing and Checking." He thinks every office should try to have a department head trained in first aid; and thus be at hand to administer first aid or call a physician without red-tape office delays. Also a stenographer so trained to give attention to minor wounds and help to create, in appropriate uniform, an office health and safety atmosphere. The company has several former Boy Scouts with some first-aid training as drivers; and also several former CCC camp drivers, all of whom must carry Red Cross first aid certificates. They are conducting driver training classes, which helps to maintain safety-mindedness and higher health standards among all drivers.

The Brady Company believes *road trailing* is valuable to help enforce safe driving habits. They plan to trail every driver about two miles at least four times a year. Such observation should include various times of day and traffic conditions. For instance, it required many trainings to discover that one particular driver drove "prudently" everywhere excepting through small towns. One of their methods to get "on the trail" undetected is to park their trailing car in a tourist camp until a driver passes, then follow. They do not publish all their observations, thus leaving in the minds of drivers an element of doubt as to how many times they may have been observed.

A. W. Meinke, superintendent, Audit & Engineering Dept., Indemnity Insurance Co. of North America, spoke briefly on "Accessories for Safety," without discussing any of the controversial opinions on their use.

Experts Take Over

The most largely attended single session was devoted to the exchange of "Safety Information, Please" about the Commercial Vehicle, Dwight M. McCracken, director, Traffic & Safety Bureau, Liberty Mutual Insurance Co., was the presiding moderator over the following panel of experts: H. S. Cole, assistant superitendent, Evening Star Newspaper Co., Washington, D. C.; Asa Caldwell, superintendent of Delivery Operations, Hale-Halsell Co., McAlester, Okla.; D. H. Gilhousen, director, Personnel & Safety, Norwalk Truck Line Co., Norwalk, Ohio; John W. Jacobson, F. J. Boutell Driveway Co., Flint, Mich.; Charles G. Morgan, Jr., manager, Div. of Operations, American Trucking Associations, Washington, D. C., and Fred W. Rice, safety engineer, Cushman

(Turn to Next Page, Please)

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An exclusive Hoof feature ...accurate control guaranteed

Yes, every Hoof Special Calibrated Governor is engine tested on the dynamometer for power, performance and accurate control before it leaves the factory. Conditions under which the governor will operate in actual service are duplicated in our laboratories—so there can be no question about the governor performing as it should . . . with no loss of power or acceleration. Another feature that provides additional savings is the pre-setting of Hoof Governors to road speed . . . at no extra cost . . . which does away with road testing. Hoof Governor performance and durability always have been outstanding . . . greatly enhanced in the new "streamlined" simplified compact model—with in-built positive spark control transfer. Smaller in size it makes an easier installation and is more adaptable than ever to the vehicles you operate. Regardless of your operation Hoof Governors will do the work better. All we ask is a chance to prove it.

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★ ALUMINUM BODY No warping or distortion.
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★ POSITIVE SPARK CONTROL
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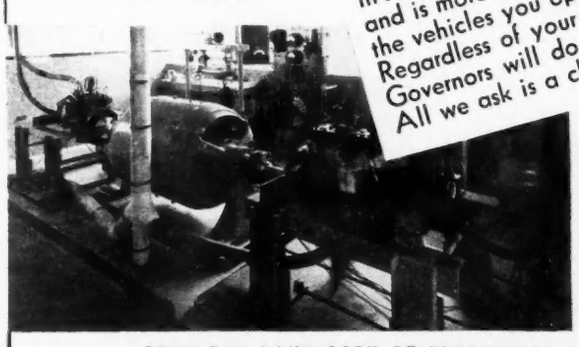
★ FULL POWER



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(CONTINUED FROM PAGE 87)

Motor Delivery Co., Chicago.

After somebody had defined "an expert" as "any damn fool away from home," the audience began to fire questions. The first was about the proper winter heating of cab-over-engine cabs; and there was mentioned two different makes of heaters which could be located low enough to get the needed circulation. A gasoline type also was declared successful, though requiring a little time to start and later watching to prevent over-heating. As to how best to *cool* or ventilate a COE cab in summer, an expert suggested installing outgoing cab vents above incoming ones, thus insuring an upward and outward air flow.

"Are truck heaters hazardous?" started a long expert-audience discussion. One operator found his drivers getting sleepy and not so alert, so removed the heaters. An insurance man reported several carbon monoxide deaths from leaving motors running to keep heaters going while the drivers were sleeping. Another declared more danger from carbon monoxide with cabs closed and no heat than with heat and window ventilation. Also drivers in northern states with no cab heaters must dress so heavily as seriously to interfere with their driving. Install heaters and put in good ventilators, another argued—and the final audience vote strongly endorsed the use of heaters.

"Is the stand-up type of truck successful?" questioned a young woman executive of a city dairy with 500 trucks. In less than two years they had had two deaths to drivers of such trucks who had fallen out, presumably either from having gone to sleep or from driving carelessly. One operator reported the control of the hazard from the turning of revolving seats, by inserting in the floor a slot which prevented such turning. Another operator who is using saddle-shaped seats, reported that drivers often would jump from the seat before the vehicle had stopped. Another declared that the hazard often was not from the stand-up seat or lack of seat, but from poor brakes or brake failures. The question was left undecided.

"What is recommended for an operator whose drivers may be conscripted?" As one answer, it was suggested that more attention might be given to drivers in higher-age groups. One operator reported 12 per cent of his drivers within the selected service age limits. But it was generally believed that the local conscription boards would consider most trucking operations as essential transportation, which is the reported present policy in England.

"How to train drivers in first-aid? . . . Methods of getting local Red Cross assistance and starting classes by cooperating companies were discussed. A company was mentioned whose drivers were credited with having saved the lives of five highway accident victims. There was a question about possible legal complications from such aid, but no definite examples were known. Fleets with drivers trained in first-aid reported fewer small accidents, less sickness absenteeism among drivers and a higher plane of general health.

"Should front tractor power brakes be reduced in winter? . . . There was

(TURN TO PAGE 90, PLEASE)

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(CONTINUED FROM PAGE 88)
almost unanimous opinion that they should be, though there is as yet no general engineering agreement on the exact percentage of such reduction, as compared with the rear brakes.

"Should smoking while driving be permitted? . . . The general answer was "yes," but supplemented by warning against lighting while driving, and the risk of throwing out lighted stubs which might be whipped up by the suction and drawn back into the vehicle. But no smoking, of course, on hazardous cargoes where forbidden by I.C.C. safety regulations.

"Are recapped and retreaded tires safe?" . . . "Yes, when handled properly," was the general answer after prolonged discussion. It was explained that there is now a national trade association with high standards for its members engaged in tire recapping and retreading operations. And these members will accept only those tires still good enough to justify such reinforcement—so "deal only with reliable operators."

Should passenger cars be equipped with fire extinguishers? The final general vote was mostly "Yes." One "No" voter explained that his company had found it was costing them considerably more to *maintain* their extinguishers than the extra insurance cost without extinguishers. But the general view was that it was best, for safety morale and possible protection of life and cargo, to carry extinguishers regardless.

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Mirror—Sturdi-bilt for truck service. With or without clearance lamp. Rubber bumper absorbs shocks—reduces damage. With cab or hinge mountings, list $2.50 to $3.75.
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SAFETY LIGHTING AND REFLECTING DEVICES

Safe Winter Driving

At a final joint session there was an important report on "Safe Winter Driving," presented by Ralph A. Moyer, associate professor of Highway Engineering, Iowa State College. He reported as chairman of a committee which had conducted more than 3000 individual tests, last winter on the frozen surface of Lake Cadillac in Michigan. These tests have exploded several popular beliefs about the prevention of skidding. First, the presence or absence of treads on tires have little effect upon skidding over ice, though well-cut treads are effective on wet pavements. Second, under-inflation of tires to get better traction has little or no value, since the slight improvement in control of forward movement is lost through greater hazard on curves. Third, all ice is not equally slippery. At near zero temperature ice is really somewhat sticky, and water on ice makes it at least twice as slippery.

The best treatment for slippery ice is to spread coarse sand or cinders, mixed with sodium or calcium chloride, which improves braking about 30 per cent. Complete chains on rear wheels cut braking distance another 30 per cent. Intermittent application of brakes is more effective in stopping and causes less skidding than locking the wheels.

Road Test Stops All

Practical proof that the trucking industry still has a big safety educational problem ahead was proved in a dramatic way by a post-convention I.C.C. safety testing demonstration, to which about 50 of the delegates devoted an extra half day. Out on Federal Highway No. 41, about 25 miles from the convention hotel, I.C.C. Safety Inspectors Ernest G. Cox and Harold C. Sanford from the

Chicago office of District No. 8, aided by a squad of Illinois State Highway police, carried out a routine highway inspection of Chicago inbound trucks in interstate operation. Following are the interesting results:

None of the 14 common and contract carrier trucks inspected came up fully to I.C.C. requirements. Some of the observed faults, as recorded by the inspectors, were: Three without I.C.C. plate numbers on one or both units of vehicle. One tractor with headlamp lens broken. Defective tail lamps on six tractors and five trailers. Defective stop lamps on six tractors and four trailers. Clearance lamps not in compliance on six tractors and five trailers. Side marker lamps on five trailers not in compliance. Reflectors missing on six vehicles, and one reflector cracked. Brakes on only one vehicle tested, and they were "very slack"; front brakes disconnected on one. Tires badly worn on two. Couplings on four not in good condition. Six with loose steering. Windshield wiper on one not working. Rear view mirror loose on one. One with cracked windshield. Five without spare light bulbs; and one with bulbs locked up, no key. Five without spare fuses. Three without fire extinguishers, and six not properly filled. One without required number of flares, and seven empty or not well filled. One without fusees, and two short of required number. One short of required number of flags. Two drivers not keeping logs, three with defective logs, and four without required 30 days copies with them. One driver "doubtful" in daily hours' compliance; one doubtful on weekly; two in violation of weekly limit. Two drivers not complying with physical examination rule. One vehicle with broken spring hanger; light connections very bad on one; and lubrication very poor on two.

At the business session of the Commercial Vehicle Section, J. W. Lord, safety engineer, Atlantic Refining Co., Philadelphia, was elected general chairman. Dwight M. McCracken, director, Traffic & Safety Bureau, Liberty Mutual Insurance Co., Boston, was elected first vice-chairman; H. H. Kelly, chief, Section of Safety, Bureau of Motor Carriers, Interstate Commerce Commission, Washington, D. C., second vice-chairman, and H. J. Jones, director of Safety & Personnel, Automobile Shippers, Inc., Detroit, third vice-chairman. H. S. Cole, assistant superintendent, The Evening Star Newspaper Co., Washington, D. C., was re-elected secretary.

Refugee Extraordinary

When the Blitzkrieg hit Europe, it found Truck & Tractor Appliance Co. doing a thriving business in the manufacture of such truck equipment as trailers, dump bodies, six-wheel bogies, steel bodies and cabs, etc. Its plants and offices were located in Antwerp, Belgium; Paris, France; Manchester, England, and Trieste, Italy.

Managing director and sole stock owner of the enterprise was Frank Kutsukian. But being an American citizen, he reasoned that in post-blitzkrieg days his services would be more useful in the U. S. A. than in Europe. Hence his temporary address is 120 Liberty St., New York, from which he is acutely interested in the possibilities of an American connection along the lines of his former business.

Merry Christmas
from the makers
and Distributors of
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REFINISHING MATERIALS
• As another year draws to a close, we pause to thank you sincerely for your purchases of Du Pont Refinishing Materials during 1940. And in the spirit of the Holiday season, we extend our heartiest wishes for a Merry Christmas and another Prosperous New Year. E. I. du Pont de Nemours & Co. (Inc.), Finishes Division, Refinish Sales, Wilmington, Delaware.
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RING FRICTION & DRAG

(CONTINUED FROM PAGE 29)

capable of exerting a higher unit pressure than the plain snap ring.

In order to effect a higher unit pressure than that available with the plain snap ring it is, of course, necessary to design the expander type piston ring to exert as much or slightly more pressure than the snap type of ring. This is partly the reason why the statement has been so often made in the past; that expander type rings create excessive friction drag and heat. This statement is made, of course, without well founded thought behind it, because it is the fundamental principle of the expander type ring that it can be designed to exert from zero pressure to a pressure that is many times the pressure of the snap ring. Suppose that an expander type ring is designed to have the same pressure as a snap ring. The spring expander is still a definite benefit in the reduction of rotational piston movement and in the dampening of intense piston vibration. A piston ring expander is as necessary between the outer ring and the piston as a shock absorber is necessary to an automobile spring.

The general acceptance of the expander type ring is a recognition of the fact that higher piston ring pressures are necessary in the modern higher speed motors. That this can be achieved without excessive heat or friction has been proven. The following thoughts are explanatory in this regard.

A piston ring when it operates in a cylinder does not actually ride on the metallic cylinder wall. It rides on a film of oil of varying thickness. That this is true can be easily realized because if this film of oil was not there the motor would cease operating. The rings and pistons would score and seize in the cylinders. It is well known that the ordinary laws of friction do not hold when there is an oil film between the two rubbing surfaces. The frictional drag of dry surfaces is proportional to the load. When there is an oil film between these surfaces the frictional drag does not increase with an increase of load. This is one reason why the unit pressure of a piston ring can be increased without increasing the drag proportionally. The increased unit pressure of the modern expander type piston ring is for the purpose of reducing the thickness of the film of oil on the cylinder wall. It does not increase the frictional drag. It is almost impossible to build an expander type piston ring with enough pressure to completely remove the oil film from the cylinder walls. Therefore, with normal ring designs, the danger of there being too much frictional drag is not present in a normally operating motor.

It may be said a condition of excessive oil consumption is present when the oil film that remains on the cylinder wall is thicker than actually needed. In the modern high speed engine the cylinders are usually overoiled as a factor of safety and the piston speed is high. Therefore, the oil film on the cylinder wall has a relatively high inertia and it takes a higher ring pressure to reduce the oil film thickness to a point where excessive oil consumption is nonexistent. The division line between

(TURN TO PAGE 94, PLEASE)

Brighten Up Roads Save the Loads

MODEL No. 860 Adverse Weather Lamps

BEAUTIES! With their inlaid gold crest, symmetrical lines and dashing style.

PRACTICAL! With the patented DUO-FOCAL REFLECTOR SYSTEM which kills fog, snow and dust glare . . . very shallow body . . . low mounting bracket . . . 8-in. lens and strong construction.

"CLIPPER WING" light pattern delivers maximum low light below center. Right on the road! 25% greater light output.

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The K-D LAMP Co.
CINCINNATI, OHIO

"BUST 'EM LOOSE"

THIS SAFER, EASIER WAY . . .

When you have to "lean" on a wrench to loosen a rusty, dirt-clogged nut—do it safely by using a Snap-on *Boxocket.* Boxockets grip the nut on *all* 6 sides—won't slip, won't spread—combine socket wrench "holding-on" power with end wrench "straight line" pull. Especially fast and sure in cramped quarters because you get full leverage with only half the handle movement of open end wrenches. Snap-on Boxockets give speedy, sure service on the toughest kind of work, and 24 sizes are available covering every tractor and implement nut from ¾" to 3⅛"—with handles providing up to 62" leverage. See your Snap-on salesman or write . . .

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NOW—EVERY GOOD DRIVER IN YOUR FLEET CAN GET

25 TO 30 MILES ON A GALLON—

NASH'S NEW LOWEST-PRICE CAR

- ★ 25 to 30 Miles per Gallon of Gasoline!
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$70 to $100 Saved—every 20,000 miles! Nash's new, lighter body, more economical engine get more mileage out of gas, oil, tires—lowers overall costs.

Weather Eye Conditioned Air keeps drivers warm—prevents winter accidents, too. Weather Eye pours in *fresh*, outside air. No hot, drowsy unhealthy "heater" fumes.

All Day Driving Made Easy! New Two-way Roller Steering takes far less effort; easier to park. New *four-wheel* coil springs give you a "heavy car" ride.

To prove how great this new car is . . . Nash offers every large fleet operator a car to drive for 30 days without obligation!

FLEET operators will agree that when Nash builds a car—it's *right.*

Just imagine this fleet car . . . big, fast, powered to deliver not the usual 15 to 20 miles a gallon—but *25 to 30* in the hands of your average good driver.

It's a completely new kind of car.

It's safer, stronger, roomier! Built not with the usual bolted frame that needs tightening every 10,000 miles, but a "unitized" construction—the frame and body are combined and welded into one solid unit.

Smoother riding, too! Nash is the only car in the lowest-price field with soft coil springs *on all four wheels.* It rests the driver while he rides; keeps the car in better shape.

Performance is better—in all kinds of weather. That new Nash Flying Scot Engine is *Manifold-Sealed* so that drivers won't waste time "warming up" in winter.

Even driving is easier with new *Two-way* Roller Steering... quieter with Sand Mortex Soundproofing.

In winter—Nash's new Automatic Weather Eye Conditioned Air System will keep salesmen on their routes even in weather cold as 10° below. Cuts down "sick" hours.

From start to finish, it's "made-to-order" for fleet service.

The economy figures you have read about it are true—proved by hundreds of thousands of miles of test driving—and we invite you to check them yourself—with your own drivers, on your own routes.

See your nearest Nash dealer—or wire W. A. Blees, Nash Motors Division, Nash-Kelvinator Corporation, Detroit, Michigan.

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Weather Eye, Fourth Speed Forward, Convertible Bed; optional equipment at slight extra cost.

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(CONTINUED FROM PAGE 92)
excessive oil consumption and normal oil consumption has always been difficult to ascertain. Probably the best normal oil consumption is that oil consumption which leaves not less than a minimum oil film thickness necessary for proper lubrication.

This is where the proper design of the expander type piston ring is important. It must be designed to produce the lowest oil consumption possible and still leave a film of oil on the cylinder wall (under all conditions), so that there is no excessive drag or friction introduced. In the past, there have been expander type piston rings which were made with exceptionally heavy springs and high cylinder wall pressure. Under certain conditions these high pressure rings would penetrate the oil films, cause excessive friction and drag and result in over-heating and loss of power. On the other hand, there have been expander type rings on the market with spring pressures that were too low, they ran perfectly free and without abnormal friction, but they did not control oil satisfactorily. The correct expander type ring design is between these two extremes.

To summarize, we state that the expander type piston ring can and should be designed to exert more pressure than a snap ring. This extra pressure is necessary to meet conditions in the modern high speed, high compression engine and this pressure does not produce friction and drag of any consequence. Expander type piston ring designs for new motors do not exert much more pressure than plain snap rings, but produce relatively great improvement in smoothness of piston operation and oil economy.

Following is a summary of some piston ring heating and friction tests made in the laboratory.

Heat and Friction Test No. 1

Ford Model A engine was set up on dynamometer in connection with conventional radiator cooling system. The load was set at 5 hp. at 1500 r.p.m. The load was set low to make temperature reading more significant of motor friction. Readings were taken of water inlet and outlet temperature, oil temperature and room temperature, all other factors being kept constant. Readings were taken every half hour for two days. The average amount of water pumped through the motor was constant, therefore, the difference in temperature between the inlet water and outlet water was proportional to the heat units removed per unit time.

The average temperature difference using expander type rings was 12.42 deg. F.
The average temperature difference using snap rings was 12.44 deg. F.

From the result it is construed that either excessive friction due to the expander type is nonexistent or that it is so small that its importance is insignificant when the large amount of heat due to burning gasoline is considered. A further test will investigate this point.

Heat and Friction Test No. 2

In order to further investigate heating and friction due to piston rings, it was necessary to eliminate heating due to burning gasoline as in the previous test, this quantity minimized the piston ring friction and it was not noticeable whether expander type rings or plain snap rings were used. The engine was motored with the throttle wide open and gasoline and ignition shut off. The fan was removed from the motor so that the temperatures would be readable. Thus all heat removed by the cooling water was due mainly to piston and piston ring friction. Readings at 1000, 1200 and 1400 r.p.m. were taken of frictional load, water inlet temperature, water outlet temperature, room temperature and oil temperature for both expander type rings and snap rings.

The following table illustrates the results of the temperature readings:

Speed (r.p.m.)	Average Temperature Differential Expander Type	Average Temperature Differential Snap Rings
1000	5.80 deg.	5.66 deg.
1200	5.75	5.00
1400	5.00	4.30
	16.55	14.96
Average	5.51 deg.	4.98 deg.

These tests taken immediately after installation show expander type developing 10 per cent more heat than plain snap rings. Of course, the actual quantity of heat represented by this percentage is negligible under actual running conditions as was shown by the previous test. The following table shows results after rings had run 1000 miles:

Speed (r.p.m.)	Average Temperature Differential Expander Type	Average Temperature Differential Snap Rings
1000	4.50 deg.	5.10 deg.
1200	3.42	4.88
1400	3.20	4.19
	11.12	14.17
Average	3.71 deg.	4.72 deg.

In this case snap rings developed more heat than expander type and it is again noted that this quantity is small when compared with the total heat involved in motor running under normal conditions. This reversal of conditions can be explained by considering the action of the inner ring. When the expander type ring is installed, the outer ring and inner ring adjacent working surfaces are new and an adjustment must take place. Within 50 to 100 miles the inner ring seats itself on the piston ring, lowering the friction considerably, and the combination of the inner ring and piston ring acts as a more flexible unit. Furthermore, the outer ring has considerably less tension than a plain snap ring and at higher speeds the effective tension of the expander is less than at lower speeds.

Heat and Friction Test No. 3

Engine was motored at speeds varying from 125 r.p.m. to 1500 r.p.m. Readings of friction horsepower, inlet water temperature, outlet water temperature, oil temperature, and room temperature were taken. The table below shows the friction horsepower of the two different types of rings.

Speed (r.p.m.)	Friction hp. with Snap Rings	Friction hp. with Expander Rings
125	0.28	0.34
250	0.37	0.51
350	0.60	0.70
500	0.93	1.07
750	1.95	1.95
1000	3.30	3.16
1250	4.30	4.10
1500	5.50	5.30

At speeds below 750 the friction horsepower with expander type rings is slightly higher than that with plain snap rings. This is probably due to the relatively better response of the expander and the lower inertia of the oil. The difference is insignificant, however, when compared with the total horsepower developed.

Heat and Friction Test No. 4

The purpose of this test was to observe the effect of expander type rings on the outlet water temperature of the motor in comparison with plain snap rings. All factors were kept constant and the same for both types of rings. The motor was run 1500 r.p.m. developing 5 hp. The horsepower was kept low so that any difference in temperatures could be noted easier. This test is not as reliable as the foregoing tests, but it is more readily appreciated by the average mechanic.

Average of 38 outlet temperature readings 187¾ deg. with expander type rings.
Average of 38 outlet temperature readings 188½ deg. with snap rings.

The higher average for expander type rings was due to increased compression and less blow-by.

Effect of Expander Rings on H.P.

A series of extended horsepower tests were made with expander type rings and two prominent makes of snap rings. The observations for each make of rings were averaged and the following table representing the results at a critical speed.

No. 1. Expander rings..... 23.4 hp.
No. 2. Snap rings..... 22.8 hp.
No. 3. Snap rings..... 21.4 hp.

The motor was a low horsepower, four-cylinder motor and kept in the same condition throughout the tests which extended over a period of one and a half months. The horsepower tests were taken every day. A detailed examination of the tests would show nothing more than the above table—that expander type rings gave a consistently higher horsepower at the same speeds.

Many mechanics not familiar with properly designed expander type rings have the misunderstanding that the expander type of ring causes excessive friction and overheating in spite of the fact that they have been on the market for many years without any major trouble of this sort. This series of tests demonstrates that there is no objectional friction, or overheating due to friction, using expander type rings of the proper design.

In connection with these tests we made the following survey of service reports sent in by field representatives covering all cases

of trouble due to expander type rings reported to them:

1930, Total service calls	100.00%	
Calls due to oil pumping	86.72%	of 1930 total
Calls due to oil overheating	00.78%	of 1930 total
Calls due to other causes	12.50%	of 1930 total
1931, Total service calls	96.80%	of 1930 total
Calls due to oil pumping	81.00%	of 1930 total
Calls due to oil overheating	1.25%	of 1930 total
Calls due to other causes	14.55%	of 1930 total
1932, Total (1st 8 Months) number of service calls	20.40%	of 1930 total
Calls due to oil pumping	17.90%	of 1930 total
Calls due to oil overheating	0.63%	of 1930 total
Calls due to other causes	1.87%	of 1930 total

From the above survey it is evident that the major piston ring complaint is oil pumping. The few reports of overheating when analyzed show the following reasons for such a condition:

Ring fitted too tight	Faulty ignition	Tight pistons
Clogged muffler	Defective condenser	Tight bearings
Regular rings used in shallow grooves	Ignition timing late	Defective coils
Clogged cylinder block	Clogged radiator	Burnt ignition points
	Faulty valves	Clogged hose

Plymouth ½-ton pick-up, one of several commercial models

PLYMOUTH COMMERCIALS FOR '41

(Continued from Page 40)

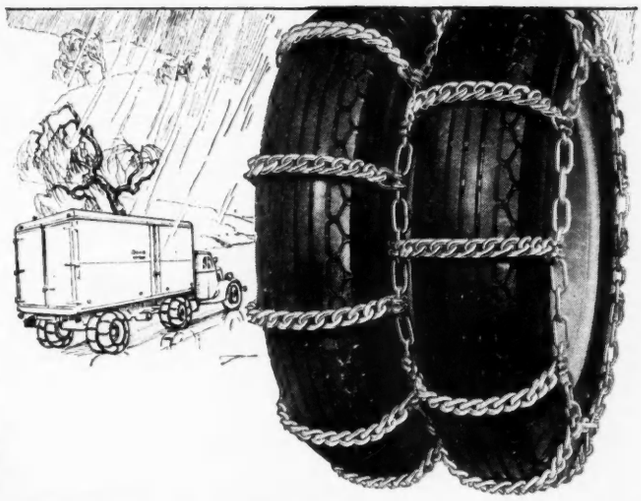
able to ride in. Windshields are hinged at the top to provide full ventilation in hottest weather, for additional comfort and as a safeguard against driver fatigue.

Structural foundation of the Commercial Chassis a truck-type frame. Frame side channels are 6 in. deep and have a 2-in. flange. These are reinforced by five cross members including the channel-type front bumper, which is built as an integral part of the frame.

This years new Plymouth Pick-Up body gives a payload space of more than 6½ ft. long with tailgate closed. There is space for loading objects 4 ft. wide flat on the floor.

CHEVROLET COE FOR '41

Streamlined for '41 is this newest Chevrolet package delivery featuring a semi-COE construction with good accessibility



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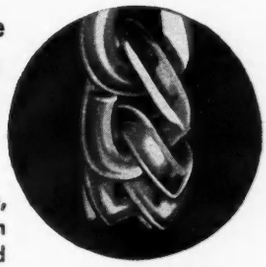
Only *CLAW* chains have the knife-edge that cuts into ice and snow for positive traction and maximum skid control.

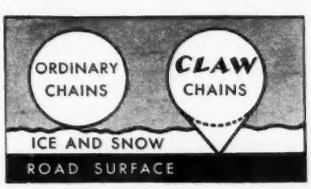


CLAW GRIP

Regardless of road conditions... ice, snow or mud... trucks equipped with heavy duty ***CLAW Truck Chains*** hold the road and get through on schedule.

CLAW Truck Chains are built for all-weather performance. First, there's the patented ***CLAW***ing edge that actually bites into snow and ice... provides positive, non-slipping traction. Then, there's 20% more metal in every cross link (see diagram below) adding extra wear and mileage. And, because every ***CLAW*** link is built of ***CLAW***-Alloy steel, the toughest chain metal known, ***CLAW*** Truck Chains can take the terrific abuse of heavy duty trucking and give maximum safety and mileage at low chain cost.

CLAWS are easy to put on too. The improved Blue Boy fastener snaps on in a jiffy. Special Indented Rim Chains eliminate play and excessive breakage between cross and rim chains. Your trucks will hold the road and get through if you use ***CLAW*** Truck Chains. Write for illustrated literature.



20% MORE CLAW-ALLOY STEEL IN THESE KNIFE EDGES... Unlike ordinary round links, ***CLAW*** links have a protruding "V" of steel that bites deep into ice and snow. There's actually 20% more metal in every ***CLAW*** cross link for safer, longer mileage. They can't slip because they ***CLAW.***

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STUDEBAKER FOR '41

(CONTINUED FROM PAGE 37)

tilated clutch with spring loaded hub, heavy service transmissions, needle bearing universal joints, and rear axles built with an extra margin of safety and dependability.

A silent three-speed transmission is standard on the Coupe Express with four-speed transmission or overdrive with free wheeling and steering post gear shift at extra cost. Four-speed transmissions are standard equipment on both the Standard and the Heavy Duty trucks. On the Heavy Duty five-speed transmissions, direct in fifth or five-speed overdrive, are available at extra charge.

The rear axle in the Coupe Express is semi-floating type with hypoid drive, while the rear axles in the Standard and Heavy Duty trucks are of the full-floating spiral bevel type.

The frame in the Coupe Express is 7 x 2 x 7/64 in. and has six cross members, four of which are box type. The Standard truck has a 7 15/16 x 2 5/16 x 9/64 in. frame in the 120-in. wheelbase with six heavy duty cross members. In the 128-in. wheelbase Standard and Heavy Duty, the frame dimensions are 8 1/16 x 2⅜ x 3/16 in., and there are six cross members. The 152-in. wheelbase Standard and Heavy Duty trucks have 8⅛ x 2 7/16 x 7/32 in. frames with seven strong cross members. The frame dimensions are 8 3/16 x 2 7/16 x ¼ in., in the 195 in. wheelbase heavy duty chassis.

All springs are semi-elliptic. In the Coupe Express the spring hangers and shackles are rubber bushed to make lubrication unnecessary. In the Standard and Heavy Duty trucks all hangers and the rear front spring shackles are rubber bushed. The rear spring shackles on these two models are the slip type.

The brake on all models are hydraulic, of two-shoe self-equalizing type. In the Coupe Express the cylinders are double acting and "stepped" to give better braking balance and straight-line stopping. On rear axles of Standard and Heavy Duty models the new Hi-Tork brake is used.

Heavy service shock absorbers are standard equipment on the Coupe Express. They are also available on the Standard and Heavy Duty models.

To take out road shocks an entirely new type of steering mechanism which has spring loaded ball and socket joints is used. The steering gear is the cam and twin lever type.

BODY OF THE MONTH

(CONTINUED FROM PAGE 31)

the step and the rear axle with a filler pipe projecting into the step area. "Toe space" is provided under the rear of the body proper so that the helper can stand close when working inside the body.

Body paneling is 14-gage aluminum hammered to shape. Twenty-gage steel is used below the sills at the rear to give longer life.

The trucks are designed to carry a payload of 4000 lb. They are governed at 40 m.p.h. There are actually in service at this writing eight trucks of this design. They are finished in dark blue with red wheels and red and gold striping. Lettering is gold. Over the windshield the truck carries a green neon sign.

Scores of big fleets have proved the greater load capacity of this UNIQUE BEARING . . . . . .

More bearing miles per dollar—that's what you get when you replace front wheel, differential and rear axle bearings with this perfect-aligning, high radial-thrust capacity roller bearing. Its superior efficiency has won the praises of leading fleet managers because it has what it takes to stand up far longer even under the toughest service. Try a set of Link-Belt roller bearings in your next job—their performance will amaze you! Ask your jobber.

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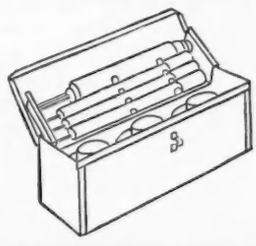

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SHOWCASE

New Bear Tools

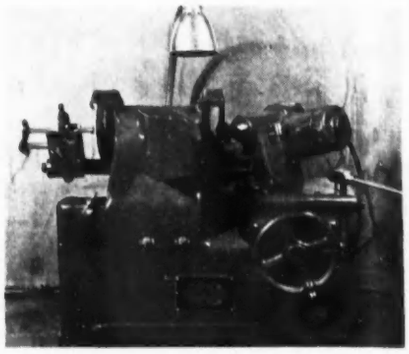
A hub cap remover and a wheel balance weight remover have been made available by the Bear Mfg. Co., Rock Island, Ill.

An adjustable pawl on the cap remover is positioned against the wheel with enough pressure applied to hold it in place. The pawl lever then is lifted to remove cap or grease retainer cup.

In using the P. D. Q. Balance Weight Remover, the concave jaw of the plier-shaped tool is placed against the weight clip and the handles then gripped and pushed toward the tire, forcing the hook jaw behind the weight. The tool is simply pulled toward the operator to remove the weight. The tool is 10 in. overall.

K. O. Valve Servicer

A new valve refacer, model A2, will be made available this month by the K. O. Lee Co., Aberdeen, S. D. With all working parts enclosed in a streamlined container, the new unit has a neat and compact appearance. Features include a workhead equipped with anti-friction and adjustable bearings, belt tension controlled by motor weight and a water pump built integral with the reservoir. A built-in filter in the water tank precipitates all grindings to the bottom. Standard power is provided by a 110-volt, ¼-hp. motor, but other motors can be supplied.



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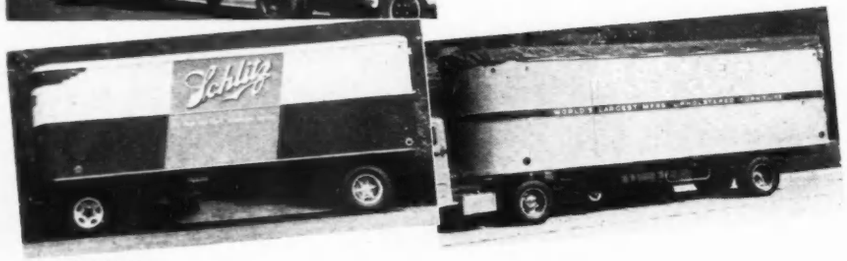
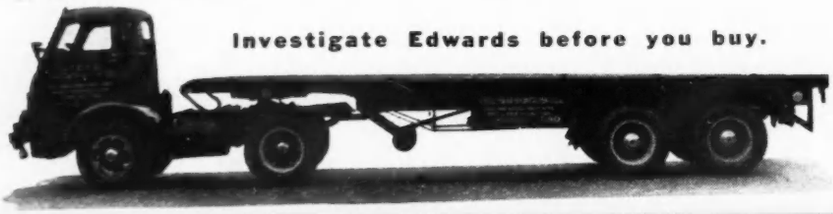


Investigate Edwards before you buy.



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A FEW GOOD TERRITORIES STILL OPEN FOR QUALIFIED DEALERS. WRITE OR WIRE.

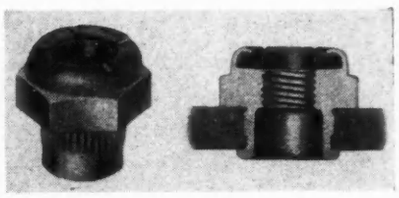
Filter Controls Temperature

A device which not only filters crankcase oil, but also maintains it at a constant temperature for effective lubrication, has been announced by the Dushane Co., Inc., 14 N. Clinton St., Chicago. Known as the Percolex Oil Clarifier, the filter contains fuller's

earth, a series of screens, cotton waste, jute and other media. It utilizes water from the cooling system of the motor to maintain the oil at the proper temperature both winter and summer. Water connections are installed in much the same manner as the ordinary hot water heater.

Knurled Shank Clinch Type Nut

A clinch type of self-locking nut with a knurled shank is being offered by the Elastic Stop Nut Corp., 2332 Vauxhall Rd.,



Union, N. J. Installation is effected by drilling a hole in the structure into which the shank of the nut is inserted. The mouth of the shank spreads against the back of the structure, resulting in a clinching hold, while the knurling engages the drilled surface and helps to eliminate any turning of the nut. The head of the nut is fitted with the vulcanized fiber collar found on all Elastic Stop Nuts.

BROOKS BODIES FOR '41

REFINEMENTS in styling and construction are featured in the 1941 line of Brooks delivery units, manufactured exclusively on Ford chassis by Transportation Engineers, Inc., Detroit.

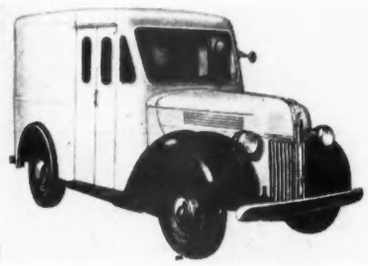
In addition to the VanEtte Senior, three new models are announced: VanEtte Junior, VanEtte Close Coupled, and the E-7 Route Salesman's Special. All E-Z Route units are available with the new Ford 4-cylinder engine. This means a new "low" in city delivery operating costs.

The VanEtte Senior is now offered in either 10 or 11-ft. body lengths on the standard 122-in. chassis.

"VanEtte Close Coupled," smaller and more compact, is designed for speedier, more economical delivery service. Styled after the VanEtte Senior, the Close Coupled job is built on a 122-in. chassis cut down to only 103-in. wheelbase. The body is 8 ft. long.

Ribbed steel paneling is now used on the Senior and the Close Coupled Models for inside linings and for door pockets. Roof and side walls have been completely insulated.

VanEtte Junior and E-Z Route units for diary and bakery service



A Brooks E-Z Route Unit

have similar improvements. A new E-Z Route "Salesman's Special," modeled after the E-Z Route Milk truck, is offered only on the 112-in. Ford Commercial chassis, without wheelbase or frame, giving 62 in. of headroom.

E-Z Route dairy and baker's models are both built on the 122 in. wheelbase chassis, reduced by transportation engineers to 112 in. The units are similar except that the dairy model is 65 in. long and the baker's model, 75 in. In both models, the truck frame is dropped to provide full-standing-height cross-aisle. Bodies are engineered to the standard Ford cowl and hood assembly.

The Snow Plows Big Fleet Owners Are Using

Leading fleet owners prefer Baker Snow Plows, because Baker's big line of "V", reversible blade and one-way plows are backed by 32 years of experience in building dependable, economical snow moving equipment. There's a good Baker plow for your make of truck.

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BAKER SNOW PLOWS

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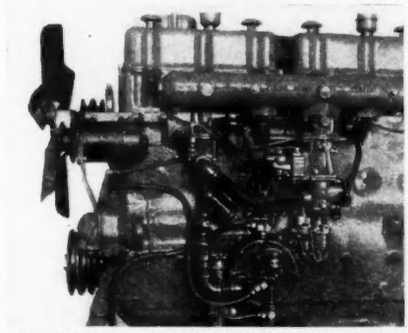
BUTANE CARBURETION

WAUKESHA BUTANE ENGINE



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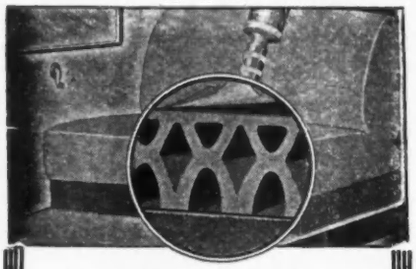

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A proven product. 1½ to 10 ton capacity. Write for complete information.
OSHKOSH
Motor Trucks, Inc.
Oshkosh, Wis.

A SPINNER SPEAKS

(CONTINUED FROM PAGE 25)

that they can be seen at night without diverting attention from the road? On the tachometer it should be possible to have the direct and over-drive m.p.h. written in. The rest of the gages could be put anywhere.

Now look out that windshield! With the insurance companies more strict and crying for better safety records, why don't designers do something about them? Each year windshields seem to get narrower and smaller. One big manufacturer of trucks paid a specialist to design the worst blind spot a truck driver ever had to look around. With most city signals up in the air, the bodies higher, and the alleys and doorways still as low as ever, we need those big, wide windshields of the old trucks more than ever.

And who was the guy who sealed the first windshield? Surely he never cooked in a cab a couple of hours on a day when it was 120 degrees and no shade with the engine boiling and the fan and exhaust pipe putting on the finishing touches.

Ventilators on most trucks are scarce, and far too small. The opinion of drivers seems to be that the best are as large as possible and screened. They should open forward on the driver's side scooping the air in, and open back on the other side thus sending the air through. It is a big help on a hot day to be able to open the rear window.

Now look down at the brake pedal. On a lot of jobs yet there is a great big, husky pedal that was designed to put on the mechanical brakes of the old days. Most fellows have driven on some slick stuff in their time, and know an easy air applica-

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Elastic Stop SELF-LOCKING NUTS

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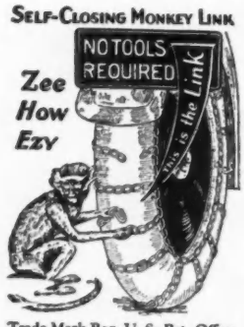

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tion is vital and is hard to accomplish with these big pedals. The best I have ever seen were on the first models of Yellow Coaches that Greyhound had out here. While on the subject of brakes, it would help on wet and icy pavement, if there was a shut-off valve for the front wheel brakes, and if the connection valves for the trailer could be worked from the cab, it would save a few accidents from broken air hoses or diaphragms as not all safety valves on trailers work after they are a few years old and have gone a few miles.

Now blow the horns. If it has two, the electric one, as a rule, isn't so bad. But those blast horns! There are air horns and air horns, and they are necessary to any unit using the roads, but a horn can be loud and carry over the noise of a truck without scaring a guy out of his wits.

Steering on some of the jobs is lots better than others. Most drivers would rather have less turns on the steering wheel. The truck is quicker acting and easier to handle on a narrow road. With the others in the mountains and in traffic you wind yourself screwy and if a car turns out unexpectedly in front of you the wheel have to be given a turn and a half. Most companies keep good tires on the front wheels and if the steering wheel is big enough the truck can be held on a soft shoulder or in case of a blow-out.

As for the transmission and compound levers: with high-speed engines we are shifting and splitting gears more. Different companies have levers in different places and positions. The easiest to work are those placed directly behind each other when the seats are so designed that they don't get in the way getting into compound. A lot of transmissions have been lost because of not

(Turn to Page 106, Please)

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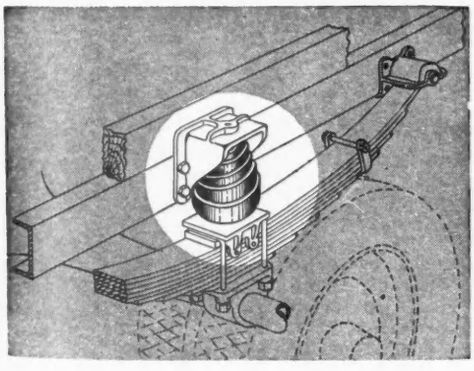

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For Complete Snow Removal
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There will be no excess seepage to undermine road and shoulders — ditches will function normally.

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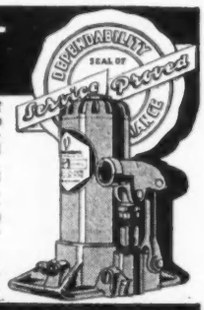

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(CONTINUED FROM PAGE 103)

being able to move a lever on a hill fast enough. Another thing that for years hasn't changed is the reverse-slip; it is right where it catches the side of the knee. The best I have seen is a transmission with none on it. The spring is in the case.

Every truck has to be backed at the end of the line, and most of them are hard to get out of to stand and operate from the running board.

Mirrors for years have been very poor. Perhaps two few operators have gone ahead and made their own.

I have seen only one truck with a hook to hang your coat and hat on as standard equipment. And there should be, also, a box for way-bills and fuses, and one in which jack, tire irons, flares and spare oil could stand straight up.

Lights on most trucks are pretty well worked out. But switches for spot light and clearance lights should be located in well-thought-out places with good long handles so that they may be used easily for signalling others.

Chromium and bright metal should all be taken from where there is any chance of its reflecting the sun or clearance lights.

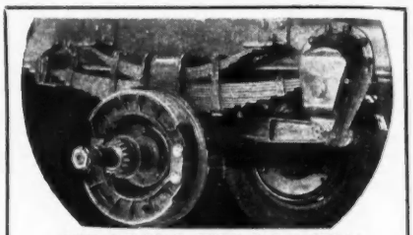
I wish truck manufacturers would give the same thought to their cabs as some do to their buses. I think it would help us keep out of jams, and make the miles a bit shorter.

JINGLE BELLS

Here Are the Quiz Answers

(See Page 18)

1. b. 3100 miles as the reindeer flies.
2. a. Klauer Mfg. Co., makers of Snogo snow plows.
3. b. "Out of the trenches by Christmas."
4. b. 1-ton to 1½-ton. The average reindeer is capable of drawing a load of about 300 pounds. Eight of them could pull 2400 pounds or a little more than one ton.
5. b. 80 feet. The biggest tree ever cut and decorated for Christmas festivities was a Norway Spruce set up in Rockefeller Center in 1935. This was 80 ft. high.
6. a. The old grey mare. Earliest traditions and pictures indicate St. Nick as a lean, gaunt old man riding an old grey or white horse. This idea is still retained today in Belgium and certain other European countries.
7. a. 42 degrees below zero. The temperature very rarely falls below this point at the Pole.
8. c. 25,000,000 packages to be delivered.
9. c. Indiana.
10. b. Sanders.



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Using Hi-Tensile Steel
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ENGINES
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Announcing
VALLEY SUPER-DUTY CHARGER
Eliminate Run Down Batteries for Low Cost Battery Mileage. The new, improved, Valley—Guaranteed (two years) charger connects to the lighting circuit . . . is easy and economical to operate . . . no moving parts. Now it is easy and inexpensive to obtain long battery life by maintaining efficient battery charge.
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Economy
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Adaptability
. . . in the most efficient type refrigeration on the market.
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U. S. Bureau of Standards states: "Oil does NOT wear out mechanically and may be used over and over again." (*After reclaiming*).
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Saves Time, Trouble and Money!
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Specify . . .
XACTO Printing Pump
To Check Fuel Deliveries at the Pump
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AMERICAN SAFETY TANKS
DO
PREVENT TRUCK FIRES
•
Ask the Men Who Use Them!
•
American Safety Tank Co.
Underwriters Laboratories, Inc., AU1302
KANSAS CITY, MISSOURI, U.S.A.

SHOWCASE

(CONTINUED FROM PAGE 42)

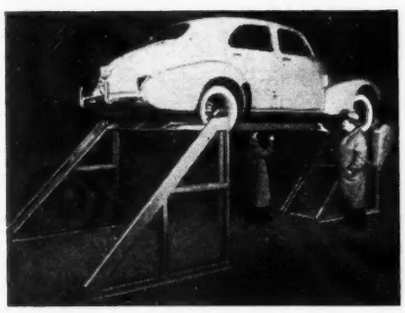
Lempco Brake Servicer

A new brake perfecter, which grinds brakes on the vehicle, has been developed by Lempco Products, Inc., Bedford, Ohio. The unit can be set up on any passenger car or light truck. A high speed motor

provides the power to grind off the lining so that the shoes are concentric with the brake drums. The manufacturer claims that this new unit eliminates the necessity of wearing in the new lining.

New Wayne Lift

Utilizing the principle of the inclined plane, a new vehicle lift is being offered by the Wayne Pump Co., Fort Wayne, Ind. An electric motor provides the power to roll the carriage up two 45-deg. inclines



until it has reached a 5-ft. vertical lift, where it rests on horizontal supports. The weight of the load moves the carriage to the ground level, the speed of descent being controlled by a centrifugal brake mounted on the flywheel. A safety latch is provided to hold the lift at any point. Known as the Hercules "Roll Up" Hoist, the new unit has a total load capacity of 5500 lb.

Diamond Safety Tank

The Diamond safety gasoline tank manufactured by Allied Equipment Co., 432 St. Aubin, Detroit, Mich., has recently been approved by the Underwriters Laboratories, Inc. Among its special features are: round shape for added strength, built-in fire and pressure guard, triple trapped fuel line, 3-in. concealed, inserted intake valve and double vent holes. The large filler pipe permits flow of 16 gal. per minute.

(TURN TO PAGE 111, PLEASE)

Over 50 Models of
AUTOCAR
TRUCKS
assure a standard unit exactly suited to your need.
ARDMORE, PA., AND LEADING CITIES

OUTSTANDING
performance in the Automotive Industry
SKF
BALL AND ROLLER BEARINGS

HOLLAND
CAN "TAKE IT"
The smartest, most improved unit of its type, Model V-400 Vertical Lift Landing Gear is especially adapted for heavy duty service.
Powerful—rugged—dependable.
Complete truck and trailer equipment. Catalog on request.
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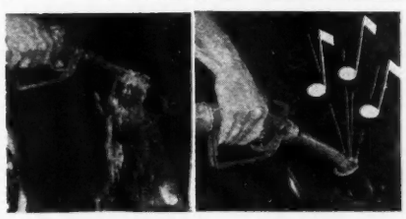
AUTOPULSE
ELECTRIC FUEL PUMP
• Uninterrupted Schedules
• Instant Starting
• Greater Economy
• No Vapor Lock
• Added Protection

AUTOPULSE CORP., DETROIT MICH.


Your present method . . . The Ventalarm way
Stop filling when the whistle stops allows proper room for expansion
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For running-in new and rebuilt engines use auxiliary lubricants containing "dag"* Brand colloidal graphite.

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Port Huron — dag — Michigan

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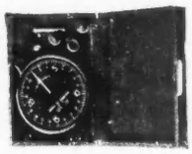

The world's largest operators of commercial vehicles use Jones Portable Tachometers to check engine speeds for tune-ups, and setting governors, etc. Here are a few: Standard Oil Co., of La., N. J., N. Y., Shell Petroleum Co., Atlantic Refining Company, Tidewater Oil Company, Keeshin Motor Express, Mack Trucks, Brockway, U. S. Navy.

Direct, instantaneous reading

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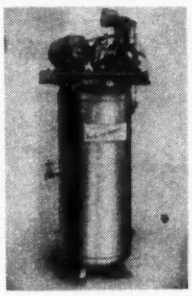
THE FITZGERALD MFG. CO., TORRINGTON, CONN.

FITZGERALD GASKETS

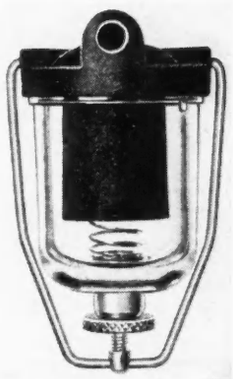
SHOWCASE (Cont'd from Page 107)

Kellogg Compressor Line



Featuring cushioned rubber mounting and improved controlled lubrication, a new line of air compressors has been announced by the Kellogg Div. of the American Brake Shoe & Foundry Co., 97 Humboldt St., Rochester, N. Y. Completely balanced crankshaft and flywheel is said to provide smooth, quiet operation. Known as Series A, the new line is available in single and two stage types, horizontal and vertical assemblies. Power available ranges from ¼ to 15 hp.

Filter Has Stone Element



A new stone gasoline filter is offered by Klemm Automotive Products Co., 1718 N. Damen Ave., Chicago. Designed in two models to fit practically all cars and trucks, the filter has a capillary and osmosis action that is said to separate the gasoline from water, even with the stone nine-tenths submerged in water. Providing over 7 in. of filtering surface, the unit may be installed at the carburetor, leaving the original gasoline strainer intact.

K-D Adverse Weather Lamp

The K-D Lamp, Cincinnati, Ohio, has a new adverse weather lamp, model 860. The body is unusually shallow to permit installation where bumpers fit close to fender, grille, or hood. The 8-in. lens of molded glass is of the horizontal prismatic type, amberized to provide maximum penetration. An auxiliary, silver-plated reflector shield is mounted in front of plain bulb.

(Turn to Next Page, Please)

Handy BATTERY BOOSTER

WITH AUTOMATIC TIME SWITCH at no extra cost

HANDY BATTERY BOOSTER No. T-30 is equipped with Time Switch which prevents over-charging. Will not injure batteries. Charges 6-volt batteries in about 2 hours. Price, complete ready to use, $79.50.

NEW LOW PRICE $79.50 f.o.b. factory

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Builders of fine Motor Trucks, Tractors, Trailers and Buses since 1910.

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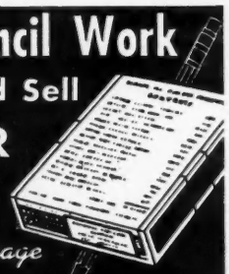
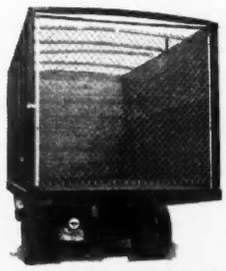
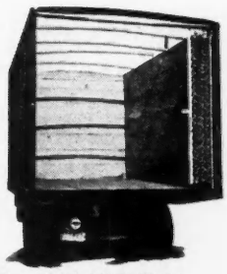


Carter Carburetor Corporation
2820-56 North Spring Ave., St. Louis, Mo.

CLOSED ← ATLAS *Collapsible* GATE → OPEN



Heavy galvanized wire suspended from rings which slide on a round track. Same "chain link" weave as is used in best quality fence around industrial plants, schools, estates, etc. Protects against theft and loss. Easy to open and close. Weave collapses within itself, saving space. Rigidly made for long, hard service, yet it is so light in total weight that average gate weighs only 90 lbs. Assembled in our factory from stock parts to exactly fit any truck. Easily installed by owner's men. Send for Data Sheet giving full details, then fill in 6 dimensions, and let us ship you one. Satisfaction guaranteed.



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HAIRFLEX
Upholstering material for truck seats and backs.

Springy curled hairs and vigorous latex rubber.
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Permalux "KOLORFILM"
PERMALUX "KOLORFILM" decals offer greater durability and economy in application and maintenance. Completely synchronous with modern truck finish, they last longer . . . look better!
IT'S MADE OF DuPONT "DULUX"
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THE PERMALUX COMPANY
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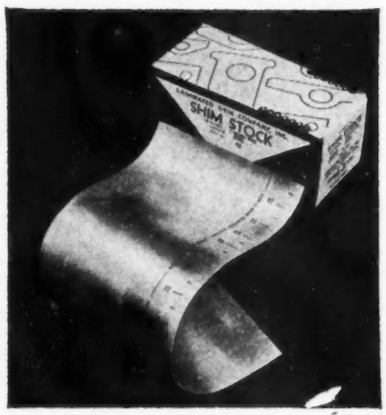
FLY-BALL GOVERNORS
FOR ALL MAKES AND MODELS OF VEHICLES
The Pierce Governor Company
ANDERSON, INDIANA, U. S. A.

SHOWCASE (Cont'd from Page 111)

Marked Shim Stock

Thin shim stock, supplied in slotted cartons and marked in inches on its edge, is now available from the Laminated Shim Co., Inc., Glenbrook, Conn. Marked from 0 in. to 100 in. and with half-inch subdivisions throughout, the stock can be pulled



through the carton slot and cut to exact size required. The stock is furnished in brass or steel, 6 in. wide and from .001 to .015 in. in thickness.

Imperial Welding Torch

Combining light weight with low cost, a new welding torch has been announced by the Imperial Brass Co., 1200 W. Harrison St., Chicago, Ill. Four welding tips of the one-piece gooseneck type are supplied. All

are equipped with heat insulating metal inserts. Recommended for body and fender welding, the torch is sold complete with four tips, wrench and two hose connections.

CAMPBELL
LUG-REINFORCED
TIRE CHAINS
☆ Greater Mileage
☆ Greater Safety
Write for special fleet discounts
International Chain & Mfg. Co.
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BY MEN WHO KNOW FLARES BEST
BOLSER FLARES!
THE NATION'S CHOICE
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SEE YOUR JOBBER TODAY

LOWER YOUR FILTER MAINTENANCE COSTS
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MICHIANA PRODUCTS CORPORATION
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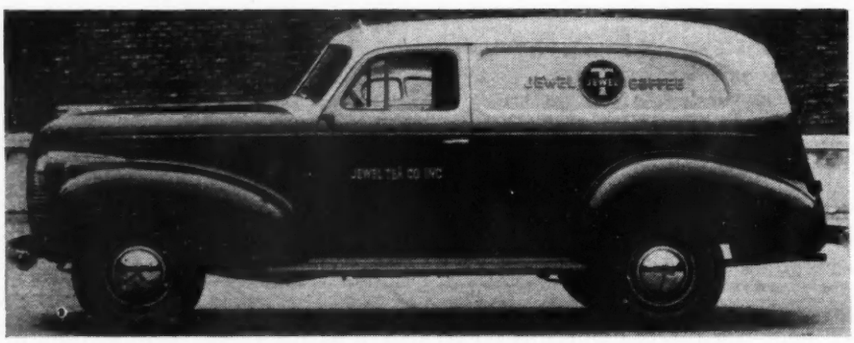


Illustration shows the effective way in which Jewel Tea Co. made use of Metalite three-dimensional lettering (See Col. 3) on its delivery units.

Metalite Truck Lettering

Three-dimensional lettering, designed for the portraying of the firm name and advertising slogan on truck panels, has been made available by Metalite Products, Inc., 10 S. Twelfth St., Minneapolis, Minn. Cast of aluminum alloy, the lettering is made in one-word units, the individual letters being held together by a bar cast into the letters. The words are mounted on the truck body by means of sheet metal screws, and the letter-connecting bar is made unnoticeable by painting it the color of the truck panel. The edges of the letters are painted a color contrasting with that of the truck body, making them stand out individually.

KATHANODE
The original Spun Glass battery with DOUBLE LIFE. For all truck and bus services. KATHANODE CORP., CHICAGO

FOR—
AUTOMOBILES
TRUCKS
TRAILERS
AND
BUSES

★

THE TIMKEN ROLLER BEARING CO.
CANTON, OHIO

SAVE WEIGHT
with
REPUBLIC
DOUBLE STRENGTH
STEEL

REPUBLIC STEEL CORPORATION
General Offices – Cleveland, Ohio

GLOBE-UNION INC., *Milwaukee, Wis.*

BAKER TRUCK
REFRIGERATION

★PROVED PERFORMANCE
★LIGHT WEIGHT
★COMPACT DESIGN

BAKER ICE MACHINE CO., INC.
1575 Evans St., Omaha, Neb.

IMPORTANT NEWS FLASH
Drastic Price Reduction On
"The GAS MASTER"

Due to improved production methods we are now able to offer the "Gas Master" at F.O.B. Michigan City **$4.50** which is a great reduction from the former price of $7.50. The quality and efficiency of the valve has not been affected and it still carries an unconditional "money - back" guarantee. We ask that you install one "Gas Master" for we know from past experience with other Fleet Owners that one installation will mean equipping your entire fleet.

Phone 3703
HIGHWAY EQUIPMENT, INC.
Oak & Harrison Sts., Michigan City, Ind.

Pocket Battery Tester

A new battery tester known as the pocket Batrecheck is offered by The Kathanode Corp., 369 Lexington Ave., New York. The test can be made at the battery or at the starter. The dial is calibrated in terms of battery condition rather than in volts or symbols, making it very easy to read.

TRUCK PRODUCTION

(United States and Canada)

	1940	1939	Per Cent Change
January	74,016	64,093	+15.8
February	71,690	63,606	+12.7
March	75,285	77,107	− 2.3
April	76,807	68,066	+13.0
May	74,139	63,793	+16.2
June	67,787	66,964	+ 1.2
July	74,005	62,750	+17.9
August	41,533	40,868	+ 1.5
September	56,703	27,560	+106.0
October	86,104	65,079	+32.5
10 Mos.	698,069	599,886	+16.4
November	.....	73,407	.....
December	.....	84,260	.....
Total	.....	757,553	.....

National Truck Week

Dec. 2 to 7 is National Truck Week for Chevrolet dealers the nation over, at which time they expect to put on salesroom floors a truck show commensurate with what is expected to be one of the greatest years in truck history.

Car-Washer Hose Addendum

The Mechanical Goods Division, along with other United States Rubber Co. units, is located at Rockefeller Center, 1230 Sixth Ave., New York City. So our face was red when an Akron address popped up in the October issue in conjunction with a description of the company's new synthetic-rubber car-washer hose.

THE OVERLOAD

(CONTINUED FROM PAGE 17)

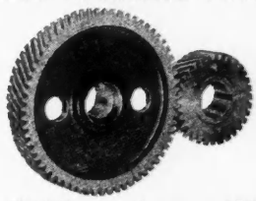
Committee and Entertainment Committee and even the Ladies' Hospitality Committee, together with the surprising information that the press was not welcome to attend and report the really meaty parts of the program. Upon his return, he emptied his pockets and one of the things he had collected was a pamphlet that showed that dairies ranked sixteenth in the vocational list of accident frequency with 2.82 accidents per 100,000 miles. According to less formal source, the average dairy accident wipes out the profit on 30,000 bottles of milk.

WOOD HYDRAULIC
HOISTS & DUMP BODIES
Every Size and Type
for EVERY HAULING JOB
GAR WOOD INDUSTRIES, INC.
DETROIT, MICHIGAN
Branches and Distributors Everywhere

NEW PRODUCTS DEPT.

A new tire for ½- and ¾-ton trucks in full 6-ply truck tire construction, but *priced lower* than passenger car tires of the same size has recently been placed on the market. Called the Heavy Duty Commercial Cavalier, it is now carried by all Goodrich Dealers. For details write The B. F. Goodrich Company, Akron, Ohio.

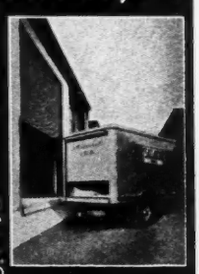
CLOYES
FOR ACCURATE TIMING SERVICE



For accuracy in timing and a longer, quieter service life, fleet engineers recommend and approve CLOYES TIMING GEARS.

CLOYES . . . the gears DESIGNED to FIT.
CLOYES GEAR WORKS
17214 Roseland Road, N.E., CLEVELAND, OHIO

KINNEAR TRUCK DOORS
Also Doors for Buildings
ALL METAL . . .
. . . Coils like a window shade, out of the way . . . . . .
CONVENIENT
BURGLAR PROOF
FIRE PROOF
MORE DURABLE



Write for Details
The KINNEAR Manufacturing Co.
2100-20 FIELDS AVE.
COLUMBUS, OHIO
Factories: San Francisco, Cal., and Columbus, Ohio

One of the most complete lines in the business—each tire built to give you more miles for less money.
THE GENERAL TIRE & RUBBER CO.
AKRON, OHIO
In Canada—The General Tire & Rubber Co. of Canada, Limited, Toronto, Ontario
GENERAL
TRUCK TIRES

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